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THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



**BUREAU OF PLANT INDUSTRY**  
UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. XII, January to December 1940

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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Vol. XII      U. S. Horticultural Station, Beltsville, Md.      No. 1  
January 1, 1940

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Strawberries-- and Vitamin C "The enthusiastic representative of an agricultural encyclopedia had waxed eloquent in the effort to sell his books at a gathering of farmers," says the Florida Grower. "Mister," said one of his unimpressed listeners, finally, "them books might help us to farm better. But there ain't no use fer you to try to sell 'em to us, because we ain't a-farmin' ez good as we know already."

I'm beginning to think that the growers and handlers of strawberries are not doing as well as they know already either--not after I've just seen the December, 1939 issue of the North Carolina State Alumni News containing a statement by Prof. G. Howard Satterfield, who teaches biochemistry at the College, that strawberries equal oranges in Vitamin C content--and that one of Dr. Darrow's most recent introductions, the Fairmore, contains much more Vitamin C than the ordinary strawberry. Consider what its Vitamin C content has meant--properly advertised--in increasing sales of the orange, and you will understand why I'm wondering if the strawberry industry isn't missing a good bet.

The Fairmore actually averaged 79 percent more than the Missionary strawberry grown under identical conditions, Professor Satterfield discovered--and a 4-ounce serving of practically any strawberry variety will contain as much vitamin C as half a glass of orange juice. Of course, as Professor Satterfield points out, Vitamin C should be in the diet every day--and 20 to 30 Fairmore strawberries would meet the daily human requirements for this vitamin. Not only is the need for this Vitamin generally recognized, but investigators are finding that it is probably a lot more important than has been realized since many vague symptoms of ill health (such as spring fever!) are undoubtedly due to a lack of it.

## STRAWBERRIES AND VITAMIN C (continued)

Early in 1939 the North Carolina Agricultural Experiment Station published, in cooperation with us, its Bulletin No. 320, "Breeding New Strawberry Varieties," by George M. Darrow of our Division and E. B. Morrow of the State station. This publication describes the Fairmore, Daybreak and Eleanor Roosevelt Strawberries. The Fairmore, coming here- with into prominence as a result of the discovery of its amazing Vitamin C. content, originated as a cross between Blakemore and Fairfax, made by Dr. Darrow at the Bell (Glenn Dale, Md.) station back in 1933.

It was among the selections made in 1934 from seedlings taken to Willard, N. C. the previous year. During the next four years it con- tinued to attract favorable attention by reason of its good qualities-- especially for its firmness and shipping quality. It was tested by cooperating growers in 1936 to 1938 and during these years proved consis- tently more vigorous in plant growth than Missionary, Klondike, Blake- more and Fairfax, and so it was recommended for trial commercially in eastern North Carolina.

The berry of the Fairmore averages larger than that of the Blakemore, is about the same shape, and somewhat less variable in size. The skin is tough and the flesh firm, resulting in a firmer ber- ry than Blackemore and, under some conditions, firmer even than Fairfax. The flesh is a rich bright red and is firm, but not quite so firm as that of Fairfax. It is one of the best strawberries in carrying quality. Its flavor is sub-acid and in North Carolina is preferred in d dessert quality by most people to all other varieties except Daybreak and Southland. The ripening season of Fairmore begins with that of Blakemore in most seasons and is considerably earlier than that of Fair- fax. The total crop is usually equal to or greater than that of Black- more and it ripens more uniformly throughout the season. Yield of No. 1 berries is usually greater than for Blakemore and considerably greater than for Missionary. All in all, it seems quite promising, but the atten- tion-winning feature is still that abundance of Vitamin C.

Of course, when it comes to all around strawberry champions, we are still taking off our hats to the Blakemore. This cross between Missionary and Howard 17 (Premier) made by Dr. Darrow in 1923, has gone on to become the leading strawberry variety in acreage in the United States--which is about the limit in superlatives. The Depart- ment certainly has good reason for pride, as we have, in the results of this small fruit breeding work directed by Dr. Darrow--"small" only in its technical designation. Not only have we given the industry its leading variety in the Blakemore--a position achieved by sheer merit--but in producing the Fairmore with its increased Vitamin C content we are pointing the way to increasing the consumption of strawberries. Vitamin C should be in the diet every day-- and try to think up a more attractive way of putting it there!



## DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"Fruit yield records of the various grape plots were completed during October. In general, the varieties at Fresno gave a higher production than in the season of 1939. This was partially due to the vines coming into full bearing, and partially to the additional fruiting wood left at pruning time in an effort to control excess vigor. The Sultanina led in production with an average on all rootstocks at the rate of 14-1/4 tons per acre, followed by Malaga with 12-1/4 tons, Flame Tokay 11-1/2 tons, Black Monukka 11-1/4 tons, and Ribier 10 tons. The Panariti, or Zante Current variety, was the lowest with 4-1/2 tons per acre, which however, included some weak vines on some of the rootstocks. The Panariti on the Solonis x Othello rootstock yielded at the rate of 6-1/4 tons per acre.

"Grape Pruning.--Grape pruning has been in progress since early November. Seedling vines and odd varieties have been pruned, a total of approximately 4,500 vines to date--December 2--at the Fresno station. Pruning has also been in progress at the Oakville station, with about 3,000 vines pruned at this time. The pruning of the maintest blocks has been delayed, awaiting a frost or defoliation. So far only very light frosts have occurred and only killed the more tender growth. Seedling vines are still in a growing condition where they were 'T' budded on rootstocks in April and May this season."

R. B. Wilcox, Pemberton, N. J.

Writing from the Cranberry and Blueberry Disease Laboratory at Pemberton on December 9th he said: "Cranberry reservoirs are low and some of them entirely empty. A few bogs have been flooded for the winter. Those growers who have no reservoirs but must catch their winter flowage have gates in place but no water on the bogs. A heavy rain is badly needed throughout New Jersey.

"Blueberry fields, of course, are excessively dry. A good many growers have started pruning and are taking advantage of the mild weather to advance the work as fast as possible."

## ADMINISTRATIVE NOTE

Telegraph Rates Effective January 1, 1940, by order of the Federal Communications Commission, Government rates on official domestic telegraph messages will be 60 percent of commercial rates instead of the 40 percent rate that has been given in the past. The new rates are subject to the same minimum charges as the old, however; 25 cents for day messages, 45 cents for day letters and 30 cents for night letters. The order will continue in effect until June 30, 1940.

## DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"There is a feeling among many apple growers that the crop of the past season seemed to lack the usual color and storage quality of previous years," he writes December 13th from the Fruit Production and Disease Laboratory.

"This seemed to be especially true of Delicious. To account for this many growers are looking to soil deficiencies for the explanation as to why the fruit did not acquire better quality. We have been asked almost daily for our suggestions on fertilizer programs for the next year, with the thought that perhaps some substance could be added to the soil to overcome the poor character of the fruit.

"There is considerable thought on the matter of complete fertilizers among growers and I am quite sure that a large acreage of orchards this coming spring will be treated with fertilizers containing phosphorus and potash. We do not feel that this is necessary at the present time in the Wenatchee district and have not advised the use of complete fertilizer, although, on the other hand, we have not attempted to discourage any grower who contemplates using it.

"We feel rather strongly that lack of color can possibly be traced to other factors such as crowded trees in the orchard, thick bushy trees from improper pruning, heavy applications of summer oil sprays, and mite infestation. These we feel have contributed more to the condition than lack of certain plant food elements.

"In all of our soil tests, over a period of several years, we have never been able to find soils that did not have rather large quantities of both phosphorus and potassium, also analyses of drainage water throughout the district show rather large quantities of soluble potassium. Phosphorus, on the other hand, of course does not show up in drainage water due to the high calcium content of the soil.

"Dr. Lindner has completed our preliminary determinations of nitrogen for foliar diagnosis of apple trees. Some of these analyses look very interesting. Leaves from trees showing extreme lack of nitrogen this summer, sampled August 29th, contain .76 percent nitrogen on a dry weight basis. Trees exhibited very high vigor with large green, leathery leaves, sampled the same date analysed 2.12 percent total nitrogen."

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### NUT INVESTIGATIONS

#### Milo N. Wood, Sacramento, Calif.

"The long continued dry spell accompanied with unusually warm weather has altered the usual action of trees in certain orchards," he reports December 2d. "This is particularly true of the almond and the walnut. In a few instances growers have become alarmed because the almond trees after dropping their leaves recently have started to break into foliage. One grower says that it must be that his trees think it is springtime and he says that if the warm weather keeps up he will expect them to bloom very soon.

"We are rather hoping for more severe weather and hoping for the rainy season to begin. I can remember one season which was as erratic as this one and the growth of almond trees was altered to a large extent. While all of this interfered with the crop for that year the trees seemed to come back to normal conditions later."

#### Texas Pecan Station, Brownwood, Tex.

"During the week ending December 2d specific gravity determinations were made on nuts from the experiments on foliage sprays. The trees sprayed with lead arsenate had larger nuts than those not sprayed. The specific gravity of nuts from the sprayed trees was only slightly lower than that of nuts from unsprayed trees. On the station orchard trees sprayed with lead arsenate have retained the foliage longer than unsprayed trees. We will follow up this problem next year to determine more definitely the effects of the spray on the foliage and upon the set of nuts next year."

#### Paul W. Miller, Corvallis, Oreg.

"We are having an abnormally dry fall this year in Oregon," he writes December 9th. "Rainfall records just released by the college weather Bureau at Corvallis, Oreg. disclosed the fact that the rainfall for November totaled only 0.31 of an inch, whereas the normal precipitation for this month is 6.92 inches.

"There are only three years on record since the establishment of the college weather bureau where the rainfall for November was lower than this year. The report further showed that the rainfall for the first eleven months of 1939 was short of the normal by 15.84 inches. Since September 1 the shortage has been 8.21 inches. The mean maximum temperature for the month of November was 4.8 degrees above normal and the mean minimum three degrees above the average.

"December 6th and 7th I attended the winter meetings of the Western Nut Growers Association, giving a talk on 'Further studies on the comparative efficiency of bordeaux mixture, copper oxalate, and some other "insoluble" copper sprays for the control of walnut blight.'"

## NUT INVESTIGATIONS

F. M. Dodge, Shreveport, La. (Robson)

"In the final summary it was found that 15 varieties in the Variety Orchard produced more nuts on the bordeaux sprayed trees than on the unsprayed trees," he writes December 9th. "Varieties showing increased yields are: Schley, Stuart, Moneymaker, Desirable, Big Z. Govett, Major, James, Bass, Van Deman, Delmas, Sabine, Lewis, Dependable, and Caspiana.

"Several popular varieties such as Success, Mahan and Moore, have failed to show any increase in yields as a result of spraying with bordeaux."

John H. Painter, Cairo, Ga. (Tung investigations)

"Dr. Potter visited the station the latter part of November," he reports December 2d. "While at Lloyd, Fla. a discussion took place as to the types of root growth generally found in tung seedlings. Basing his opinion on previously observed specimens, Dr. Potter ventured a statement that tung seedlings, generally speaking, do not have true tap roots. Several specimens in our nursery were consequently lifted and Dr. Potter's statement generally verified. One individual, however, came very close to having a tap root and since this specimen was nearest to a tap root Dr. Potter claims to have ever seen in tung, it was brought into the laboratory where Mr. Sharpe got a very good photograph of it. While this technically could not be called a tap rooted tree, for all practical purposes such as digging and transplanting, it was too close to being tap rooted for comfort."

U. S. DEPARTMENT OF AGRICULTURE, BELTSVILLE RESEARCH CENTER

Memorandum No. 681, Supplement 1, dated December 9, 1939, from the Office of the Secretary, states that "Memorandum No. 681, dated December 10, 1935, amending paragraph 2 of Memorandum No. 648, dated August 28, 1934, which in effect changed the name of "Beltsville Research Center," to "National Agricultural Research Center" is voided effective December 9, 1939.

Paragraph 2 of Memorandum No. 648 is therefore amended by the substitution of the words "U. S. Department of Agriculture, Beltsville Research Center" for the words "Beltsville Research Center of the Department of Agriculture." This title will be used in all official papers and reports.

Our headquarters, however, are still "United States Horticultural Station, Beltsville, Maryland," so don't be addressing us at the Research Center!

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SUBTROPICAL FRUIT INVESTIGATIONS

John O. Reeve, Pomona, Calif.

"In our citrus irrigation research, it is necessary to develop methods of applying water uniformly on the surface and to definite depth. Sprinkler irrigation is being recognized as an economical method of obtaining even distribution of water, of decreasing run-off and resulting soil erosion, and of preventing leaching and deep percolation with many other minor advantages. Especially is it advantageous in orchards that are laid out on land with very uneven topographical features making furrow irrigation almost impossible. Overhead types of sprinklers have been used considerably in citrus groves, but their efficiency is rather low and their distribution is frequently unsatisfactory. A change to underhead or under-the-tree types is becoming popular among orchardists.

"Most of the sprinkler heads in current use require high pressures to operate, due to their manner of sacrificing velocity head to obtain distribution. This makes it impossible for those growers whose distribution lines are of the concrete, low-pressure type, to use sprinklers for irrigation unless they install high pressure lines. With the price of fruit what it is today most growers cannot afford to do this. To make it possible to utilize existing lines for economy's sake, a sprinkler head designed to operate under a low-pressure head of from 6 to 15 feet or from 2.6 to 6.5 pounds per square inch was obtained....

"The greater portion of sprinkler heads now in use of the high pressure type are so designed that a large part of the available pressure or velocity head is dissipated in breaking up the issuing jet of water into small drops or fine spray for distribution. Thus a high initial pressure head is required. The sprinkler head above referred to is so designed that the velocity is not sacrificed in order to distribute the water, which lowers the necessary operating head. Under a head from 7 to 10 feet it will discharge 3 to 4 gallons per minute, covering a circle of 10-foot radius.

"In one of our plots these sprinkler heads have been installed in lateral lines of steel pipe, which is connected directly onto the concrete stand pipes. As the maximum pressure head that the concrete line will hold is around 15 feet, it is ample for operation.

"Probably one disadvantage in using this type of sprinkler will be the effect of puddling or sealing of the soil surface by the large drops distributed. It may be feasible to overcome this disadvantage by growing a cover crop that would protect the surface from puddling. Trees irrigated by these sprinklers are being compared with those irrigated by broad furrows."

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U. S. HORTICULTURAL STATION, BELTSVILLE, MD.

The Station seminar for Tuesday, December 19, offered a double feature: A talk by Mr. Gould on the organization of the station from an administrative standpoint; and a discussion by Mr. James H. Beattie, our superintendent, of the facilities and operational problems of the physical plant.

You perhaps recall the story of Mark Twain's famous lecture on "Milk?" He had nothing at all to say about milk, he explained when the time came for him to speak, but he felt that his talk should have a title of some sort and had decided that "Milk" would be as interesting as anything he could think of at the time. Then he went on to discuss things in general--with no mention at all of milk!

Mr. Gould has apparently read and profited by Mark's experience, for he omitted detailed reference to the administrative work but went on to give us an informal talk concerning the Division's work in general and that at the Beltsville station in particular. Still, the title listed in the program, the work at Beltsville from an administrative standpoint, really offers an excellent subject, and it may be reached at some other time.

It seems quite likely that Mr. Gould, having advance knowledge of the talk J. H. was to make, decided that the latter would give us plenty on which to chew. He did. Those who were fortunate enough to be present left the meeting with a much clearer idea of the facilities and operational problems at Beltsville; and with an even clearer idea of the amount of thought and "elbow grease" that has gone into the efforts that have brought the station to its present high state of efficiency.

Of special interest to section leaders was Mr. Beattie's explanation of the handling of labor, charged against the various projects. He called attention to the fact that charges couldn't be made on the basis of a 363-day year since after deducting Sundays, holidays and annual and average sick leave, he had to figure on about 240 working days--and so charges must be made against projects so as to return the entire year's salary of the worker in 240 days of actual employment. Project leaders who missed the talk should remember this--before calling attention to the apparent overcharge for labor!

Also, Mr. Beattie expressed the hope that eligibles will be provided for such positions as junior farm hand, farm hand, farm foreman, junior station helper, field station helper, senior field station helper, and principal field station helper. With such Civil Service registers he could appoint workers who would be eligible for simple technical tasks without raising any question as to their misassignment.

In addition to "turning on the heat" in connection with labor charges against projects, J. H. has a tremendous job in taking care of other heating needs, for practically 50 percent of the general operating expenses falls under the head of heat of one sort or another. Thus the heating and lighting installation is remarkable in its scope and efficiency. It would be impracticable to go into reasonable details in the limited space we have at our disposal. Mr. Beattie solved it to a great extent by the use of diagrams tracing the transmission lines from here to there. Best of all, the heating and lighting equipment works to the entire satisfaction of all concerned. The proof of the pudding, so to speak.

Some features of the greenhouse range are so unusual as to demand at least a brief mention. The choice of site was determined by a number of factors and ten separate studies were made in order to correlate all the factors involved in a satisfactory manner. For example, it was desired to select a site where the greenhouses could be connected with a ramp by means of which movement of heavy plant material could be made from one house to another or throughout the range on trucks. This necessitated a site where the slope of the ramp would be not over 4 percent. It was also desired to keep the range at such an elevation that there would be ample opportunity for drainage. The elevation of the west house No. 5, for instance, is 122.5 whereas we consider 1.20 the highest possible point for flood water.

The basement sections to provide space for the storage of supplies and for constant temperature and light relation rooms are unique. In this range we have two sections each 40 x 170 feet constructed with provision for a central hall and storage, constant temperature, or light relation rooms, in sizes 8'4" x 16', or multiples thereof.

The use of unit heaters has been carried to an extent not heretofore practiced so far as we know. In this range we have installed 53 of these units. An idea gained from previous experience has been to use pipe coils on the side walls of each section, these to be manually controlled and intended to be used to maintain a certain "base" temperature with unit heaters thermostatically controlled to care for fluctuations in temperature. Such a system gives us extremely close control.

The houses have been designed in units large enough to permit of the laying out of Latin squares on roses, carnations, tomatoes, cucumbers, or other forcing crops. This is probably the first attempt to plan greenhouse experiments on a basis where the results will be capable of statistical analysis.

The headhouse is 30 feet wide, a width that makes possible laboratories about 22 feet wide, sufficiently roomy for almost any need; with hot and cold water, gas, and electricity.

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DELPHINIUMS--AND THE GARDENER'S PRAYER

Farmers' Bulletin No. 1827, "Culture and Diseases of Delphiniums," by Furman Lloyd Mulford and Freeman Weiss, will be welcomed by flower lovers, since some kinds of delphiniums are suited to culture in practically all parts of the United States except the hot arid regions. These showy annuals and perennials are mostly blue and white, but there are red and yellow species also.

Delphiniums are natives of the North Temperate Zone, and several species are found in this country, the annuals being known usually as larkspurs. A few of the perennials that have been much improved by selection are what we mean when we mention "delphiniums." Several kinds are available for many different purposes--borders, cutting, naturalizing, and in rock gardens.

Yes, I was about to say, under the circumstances, that this new Farmers' Bulletin was the answer to the gardener's prayer. On looking into the matter further, however, I find that the gardener's prayer is a good bit more all-embracing than I had supposed--if one may judge from the version printed in Karel Capek's "Gardener's Year." This goes as follows:

"O Lord, grant that in some way it may rain every day, say from about midnight until 3 o'clock in the morning, but, You see, it must be gentle and warm so that it can soak in. Grant, too, that at the same time it would not rain on campion, alyssum, helianthemum, lavender, and the others which You in your infinite wisdom know are drought-loving plants--I will write their names on a bit of paper if You like--and grant that the sun may shine the whole day long, but not everywhere (not, for instance, on spiraea, or on gentian, plantain lily, and rhododendron), and not too much; that there may be plenty of dew and little wind, enough worms, no plant-lice and snails, no mildew, and that once a week thin liquid manure and guano may fall from heaven. Amen."

Apparently something more than this bulletin is needed to make the average gardener completely happy; but it will help. The author's point out, for example, that delphinium failures more often result from congenial cultural conditions than from parasitic or disease-inducing organisms. A deep, well-drained but retentive soil is important, preferably neutral or somewhat alkaline. Crown and stem rot attacks plants growing under favorable conditions after the soil has become infested by previous culture of delphiniums or other susceptible plants. Here rotation of plantings and soil disinfection afford the only remedy.



## ADMINISTRATIVE NOTES

Electricity, Water, heat. A representative of a charitable organization, approaching our workers during the Christmas period in connection with the assembling of boxes for the poor, asked one of the clerks: "What do you do with your old clothes?" In all seriousness he replied: "Why, I brush them and fold them carefully at night--and I put them on again the next morning."

This man has apparently learned the importance of economy and so may not need the warning contained in a recent memorandum from the Department's Office of Plant and Operation--or he may! At any rate the memorandum calls attention to the fact that the bills for electric current, etc. are increasing steadily. Some of this increase is the result of our increased activities, of course, but a check up appears to indicate that considerable savings might be made by a little more thoughtfulness on the part of the average employee.

A tour of inspection, that is, revealed that on bright days during office hours lights were left turned on that served no immediate purpose. Lights in temporarily unoccupied space were left turned on. And a surprising number of workers departed for home at the close of the official day without bothering to turn off the lights.

We encounter the same problem at field stations, of course. At the U. S. Horticultural Station, Beltsville, Md., for example, expenditures for heat, electricity and water constitute a good portion of our operating cost. A saving made by thoughtfulness on the part of the individual employee often counts up to a considerable amount over a year. To leave a room lighted unnecessarily at Beltsville, for example, entails a needless expense of from 2 to 5 cents an hour; an open water faucet may waste 20 cents worth of water in an hour; and a radiator or unit heater left on when not needed entails needless expense. Of course all workers should be cautioned to turn off ovens and other apparatus when not needed. Where a leaky valve or something of the sort is noticed, have it attended to promptly--and save enough to cover the cost of repairs and then some! (New Year Resolution No. 1!)

## A KEY TO THE TYPICAL VIRUSES OF LEGUMINOUS CROPS

Under this title, Dr. Freeman Weiss, now with the Division of Mycology and Disease Survey, Bureau of Plant Industry, contributes to the December 1, 1939 issue of the Plant Disease Reporter, the first of a series of projected studies that will deal with the identify, host range, differentiation, and classification of viruses affecting crop plants in the United States, as a basis for the preparation and maintenance in the Plant Disease Survey of an index of viruses and of virus diseases.

Vol. 12 No. 1

January 2, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
January 15, 1940.

No. 2

Apple Dropping. In connection with a discussion by F. E. Gardner, Paul C. Marth and L. P. Batjer of "Prevention of the Pre-Harvest Drop of Apples by Spraying with Plant Growth Substances," at the meeting of the American Society for Horticultural Science at Columbus, Ohio, December 30th, the Department's Press Service distributed to the papers an excellent summary of the work reported on.

Growth substances, such as naphthaleneacetic acid and naphthaleneacetamide, when applied in the form of a spray promise to prevent to a large degree the dropping of apples immediately before harvesting, says this summary. Growth substances came into practical use a little more than three years ago when it was discovered that cuttings that were difficult to propagate could be induced to produce roots after being soaked in a solution containing the substance. Two years ago the same substances were used in sprays to produce parthenocarpic fruit.

In carrying out the rooting experiments it was observed that petiole stubs remained attached to the cuttings abnormally long. In a similar manner, the parthenocarpic fruit showed a persistence in staying on the plant. These and other experiments served as a background for starting experiments to prevent dropping of apples.

The tendency for apples to drop is, in general, characteristic of early varieties. It is also a frequent occurrence with midseason and late varieties. As the fruit approaches the proper maturity and color for harvesting, the danger of loss from dropping increases. Each day that the apples remain on the tree to attain these desirable market qualities become more of a gamble. With some varieties, such as Stayman Winesap, a disastrous drop may occur overnight. On the other hand, McIntosh, a notorious dropper in many fruit sections, may fall steadily for several weeks prior to harvest time or in some cases drop suddenly.

"The experiments were conducted on an orchard scale during the past summer and fall. Power equipment was used and the trees were sprayed thoroughly, using from 7 to 8 gallons of spray for small trees and as much as 25 gallons for large trees carrying 20 or more bushels of fruit... Some 21 different varieties were included in the study.

"Using various strength sprays, it was found that .0005 percent of the growth substance was sufficient. This amounts to one part of the substance to 200,000 parts of water, or about one half teaspoonful to 100 gallons of water. Some better results were noted when 1/8 of 1 percent of oil was added to the spray. No ill effects were noted when the spray was applied with the codling moth spray of lead arsenate and lime, which suggests the possibility of combining the anti-drop treatment with the regular spray program in the case of early varieties.

"As examples of effectiveness of the sprays, when 8 Stayman Wine-sap trees were sprayed with a .0005 solution the average drop 18 days after the spray was applied amounted to 23.3 percent. On unsprayed trees the drop came to 61.4 percent. With York Imperial under the same conditions, the sprayed trees dropped only 14.1 percent compared to 40.7 percent for the unsprayed trees.

"On most varieties effect of sprays persist for two or three weeks. With the McIntosh variety, however, the effect diminishes after 8 or 9 days. Best results were obtained with this variety when the spray was delayed until drop started. Then, a second spray can be applied when the first runs out.

"With most varieties, the best results were obtained when the spray was applied just as the drop begins. This utilizes the greatest period of effectiveness. The effectiveness also is influenced by the thoroughness of the spray, and to some degree, by the temperature immediately following the spray. The spray takes effect more readily under warm temperatures.

"There is no visible residue left on the fruit, and tests with laboratory animals prove that the spray material is not toxic even in large amounts."

The only observable effect on the fruits seems to be the excellent color developed, so notable that it leads one to wonder if there may be some more direct color effect than can be explained by the fact that the fruit hangs longer on the tree.

An amusing Associated Press item concerning the work is headed "They're Gluing Apples to Trees," and is illustrated by a cartoon showing a small boy watching the spraying and exclaiming "Gosh! Now I can't get any apples!"

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### SPRAYING TO BREAK REST PERIOD OF PEACH

This, of course, refers to the peach tree, and need not unduly disturb the girl friend. We have no wish to break her rest period, but Dr. John H. Weinberger aroused considerable interest at the Christmas meetings at Columbus with a paper before the American Society for Horticultural Science, describing studies on the use of certain dinitrophenol compounds to break the rest period of peach trees.

"Spraying peach trees with a dinitrophenol compound supplements cold weather in breaking prolonged dormancy, a condition in which buds fail to break their rest period following mild winter in the Southern peach belt," says the news release concerning the paper. Dr. Weinberger, of course, is located at Fort Valley, Ga. It goes on to say that scientists have so far been unable to determine why a peach tree, as well as many other plants, enters a rest period late in summer and fails to respond normally to favorable growing conditions unless there is a sufficient accumulation of cold in the winter. At Fort Valley most varieties require at least 1000 hours of accumulated temperatures of 45° F. or below before the rest period is broken.

Tests started in the winter of 1937-38 at Fort Valley and near Albany, Ga. (100 miles south and near the extreme southern edge of the commercial peach belt) and continued through the winter of 1938-39 revealed that time of applying the dinitrophenol spray is the most important consideration. When the spray was several weeks too early there was not enough stimulative effect to break the rest period. Much of the effectiveness was lost when the spray was applied only a few days too early or too late. Dr. Weinberger found that the best time of application of the spray varied widely with the cold requirement of the variety and the severity of the winter.

The newspaper account does Dr. Weinberger a grave injustice in asserting that by collecting "shorts" from the orchard trees after a definite number of cold hours had accumulated and taking them inside the greenhouse where temperatures were kept above the 45-degree mark, it was possible to find the time when the spray should be applied. Actually it was peach twigs that were brought into the greenhouse--or shoots, if you will; but not "shorts." The boys at Fort Valley do not attend to their own laundering.

The method used in applying the dinitrophenol sprays was to dissolve the chemical in oil, emulsify the oil, and apply mixed with water at the rate of 3 percent of the oil emulsion to 97 percent water, so that the finished spray contains .06 percent of the chemical.

## THREE NEW BLUEBERRY VARIETIES

In a memorandum to fruit growers and nurserymen, dated December 15, 1939, relative to the introduction of three new varieties of blueberries, Dr. Auchter says: "The Bureau of Plant Industry herewith releases for propagation and introduction three new blueberry varieties produced as a result of its breeding investigations. A circular giving a more complete description of these three varieties is being prepared. These three new blueberries, originated by the late Dr. F. V. Coville, are named Atlantic, Pemberton, and Burlington, and are introduced for trial by those interested in late maturing commercial varieties.

"All three are notably resistant to cracking in rainy seasons. The Atlantic and Pemberton bear very large fruit. The Pemberton has the most vigorous bush of any variety now in a planting near Pemberton, N.J. where it has been tested. The Burlington also has an exceptionally vigorous, fine bush. The fruit of the Burlington does not tear in picking, and has the characteristics of an excellent keeping and shipping sort. It is somewhat later than both Jersey and Rubel, being, in fact, the latest variety now grown at Whitesbog, N.J. Atlantic and Pemberton ripen about with Jersey and Rubel. The berries of all three hold up well in size at the later pickings--better than Jersey and Rubel. All three have been hardy in New Jersey, and in a limited test at Amherst, Mass. the Pemberton has been hardy. The characteristics of these varieties as grown in central New Jersey are set forth as follows:

"Atlantic, tested as GN45, is a cross of Jersey x Pioneer. Where it has been tested in New Jersey the bush is vigorous and the clusters are large. Compared to Rubel it is much less costly to prune and somewhat more productive. The berry has a better blue color, is much larger, has a slightly better scar, is somewhat better flavored, and is about with Rubel in season. It is probably more difficult to propagate than Rubel.

"Pemberton, tested as FI 66, is a cross of Katharine x Rubel, and has the same parentage as Stanley. Where it has been tested in New Jersey the bush is exceptionally vigorous and productive, more so than that of Stanley, Jersey, and Rubel; the clusters are very large; the berry is dark blue, larger, holds up in size better than Stanley or Jersey, and is better flavored than Jersey or Rubel but not so aromatic as Stanley. Its scar is not so good as that of Stanley, Jersey or Rubel. In season, about with Jersey; propagates very easily.

"Burlington, is a cross of Rubel x Pioneer. Where tested in New Jersey the bush is very vigorous and productive, more so than that of Jersey and Rubel; clusters medium in size; the berry a light blue, fine flavored, second to Stanley in this respect; large and has an excellent scar; in season later than any other sort now grown in New Jersey, being about a week later than the Jersey. It propagates easily.

"The U. S. Department of Agriculture has no plants of these varieties for distribution."

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## SUBTROPICAL FRUIT INVESTIGATIONS

H. E. Stevens, Orlando, Fla.

"In our spraying work on the control of bloom blight and anthracnose of the Haden mango in Florida during the past few years, considerable attention has been given to the pollination and setting of fruits in this variety," he writes January 2d. "The Haden ordinarily matures but a very small percentage of normal fruits under the most favorable conditions. It was generally believed that attacks of the anthracnose fungus was responsible for this condition. Our spraying experiments soon indicated that other factors were involved, as far as the Haden variety was concerned, and several preliminary studies have been made in connection with the disease control work. It is evident that some other factor is responsible for the failure of the Haden mango to set satisfactory crops of fruit during normal seasons when other varieties set an abundance of fruits. The cause of this failure is not definitely known yet, but the problem has been investigated along the following lines:

"Temperature relations to fruit setting: Mango bloom clusters have been heated the past two seasons for periods of 7, 10, and 30 days, keeping the temperature as nearly as possible above 60°F. during the entire period. Heating had no effect in setting fruit. However it did force a rapid maturity of the bloom panicles, an early opening of flowers, and materially shortened the bloom period. Heated bloom clusters would open all perfect flowers (some 300 or 400) in ten days to two weeks, while unheated clusters of the same age and size would require from four to six weeks to go through the same process. Heat was only applied at night.

"Study of dropped fruits. Haden fruits apparently set and later drop before they attain the size of a small pea. During the past three seasons several thousand of these fruits have been collected, cut, and examined as to the condition of the embryo. Practically all of the fruits that drop prematurely show embryo abortion. The young embryo apparently begins to develop but aborts and in a few days the tissue becomes brown or black and the fruit drops. Tissues of embryos have been cultured but no organism has been yet isolated from such tissue.

"Cross-pollination. The particular Haden tree under study is isolated from other mango trees and is not directly subject to pollen from outside sources. Grafts of the 'Apple' mango, a seedling strain, were put into this tree four years ago in the hope of increasing the set of fruit by cross fertilization. For the past two seasons the Haden mango blooms on this tree have been naturally exposed to this 'Apple' mango pollen. There has been no apparent increase in the set of Haden fruits on this tree but each season the 'Apple' mango graft has produced heavily.

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### SUBTROPICAL FRUIT INVESTIGATIONS

H. E. Stevens (continued)

"Last season several Haden blooms were enclosed and hand pollinated with pollen from the Haden, 'Apple,' and Julie varieties. Some 150 fruits were hand pollinated but not a single fruit matured from this lot. All dropped sooner or later, showing aborted or shriveled embryos.

"Use of hormone solutions. One season a hormone solution was sprayed on several clusters of Haden bloom and enclosed from insect visitation. No fruit set as a result of this treatment."

(The above information is in the form of unpublished notes. Some of the information will be included in a bulletin on mango diseases to be published in the future. H.E.S.)

### DECIDUOUS FRUIT INVESTIGATIONS

E. S. Degman, Medford, Oreg.

"We have finished analyzing our leaf samples for nitrogen. As might be expected there were considerable differences in nitrogen content of leaves from the different orchards and plots, depending on the general vigor of the trees. There was a distinct though not universal tendency for the weaker trees which showed a lower nitrogen content on August 1 to lose a greater percentage of their nitrogen by October 30th. This would tend to bear out the observation made by Lincoln a few years ago that trees took nitrogen from their leaves in the fall in proportion to their need. This was later called an anthropomorphic idea by Murneck. Well, who knows? It is rather odd, though, that plot 'New One' was unable to anticipate on August 1 that it would lose a large percentage of its leaves in the next two weeks and it failed to withdraw its required nitrogen. To make up for this lack of foresight on August 1, it withdrew a greater percentage before final leaf fall."

R. B. Wilcox, Pemberton, N. J.

"Most cranberry bogs that depend upon the collection of drainage water have not yet received their winter flowage," he writes December 28th. "The temperature has gone down so gradually, however, that the vines should be in excellent condition to stand exposure. There was a strong northwest wind from the 21st to 25th, but the temperature was fairly moderate. The reservoirs at Whitesbog are empty, and the seedling plantation has not yet been flooded. Blueberry pruning is well advanced for this season. The wood is well ripened, but a number of growers report a light set of fruit buds."



## NUT INVESTIGATIONS

John R. Cole and John R. Large, Albany, Ga.

"The harvest of pecans in the Taylor orchard was completed a few days ago," they report December 23d, "and totalled 8,782 pounds from approximately 12 acres of experimental plots. This total exceeds the previous high of 1937 by 1,182 pounds. The tonnage of nuts harvested as well as their value is as follows:

Schley .....	3,435 pounds	at	16 cents a pound,	\$549.50
Stuart .....	4,609 "		10 " "	460.90
Moneymaker ..	253 "		8 " "	20.24
Alley .....	485 "		8 " "	38.80
	<u>8,782</u>			<u>\$1,069.44</u>

"Of particular interest concerning this harvest is the fact that our cooperator operated 125 acres of pecan orchards in addition to the above plots. However, only 3,000 pounds of nuts were harvested from these other 125 acres. In other words, we harvested three times as many pecans from 12 acres as were harvested from the other 125 acres. The trees are all about the same age and planted on the same soil types. ....As for individual plots, our recommended 2-1/2-50 prepollination spray to be followed by the 3-1-50 bordeaux plot was again the best in tonnage as well as in quality....

"The highest yield from any one tree was 90 pounds, and the average was 62 pounds. This compared with the check trees where 10 pounds was high for individual trees and 3 pounds was the average. There was a difference of 59 pounds in the sprayed and unsprayed trees. Looking at this from a financial angle, we obtained further interesting information: The sprayed nuts sold for 16 cents per pound or \$9.92 per tree. There were 10 trees per acre making this total \$99.20 per acre. On the other hand, the quality of the check nuts was very poor and they sold for only 5 cents per pound, 15 cents per tree and only \$1.50 per acre. Therefore the nuts from our sprayed plot sold for \$97.70 per acre more than those from the unsprayed checks. The only difference in the treatment that these trees received was the spraying, which cost \$1.00 per tree or \$10.00 per acre. This makes a net profit of sprayed over unsprayed trees of \$87.70 per acre. The trees were the same age and sizes, and were fertilized and cultivated exactly alike.

"Other interesting information was the difference in yield of the plots receiving the prepollination spray application, and the plot that received the later three sprays only. There was a difference of 27 pounds of nuts per tree and the quality of the nuts was much superior on the trees that received the prepollination spray, in comparison with those that did not receive it."

## NUT. INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"A rather unusual condition of pecan trees has been noted recently," he writes December 23d. "Scattered trees, or a few rows of trees, in orchards that had fair care but which were defoliated early in the fall have forced out an appreciable amount of new foliage. Weather conditions have not been markedly favorable for growth as based on our general concept of what constitutes good growing conditions. In addition to the early defoliation of these trees, the fall has been very dry up to about one or two weeks ago when good rains were received and while there have been no extremely low temperatures, the fall has been characterized by temperatures lower than normal with no days of extremely high temperature. Whether the crop on these trees was heavy or light is unknown and its effect on the trees is problematical. It is our opinion at present that these trees became dormant rather early in the fall and have received enough cold to carry them through the dormant condition so that with adequately favorable conditions for growth, shoots were forced out. If the conditions become extensive it will, without doubt, decrease the crop prospects for this section in the coming year.

John H. Painter, Cairo, Ga. (Tung Investigations)

"The end of the scouting season finds this station with 49 trees selected as superior specimens of the tung. We have emphasized actual frost resistance this year as measured by bud and twig killing of the selected tree as compared to surrounding trees. We have had as a primary requisite for selection, in addition to a crop each year, a crop for every year from 1935 on, provided the tree is of sufficient age. The years 1935 and 1937 both being light crop years due to cold we feel that a tree having fruited in three such years is well worth recognition. As a result of this selection work we believe we have at least half a dozen individuals that will compare favorably with anything existing in the entire tung area. It may be that we are covering a little too much territory in this claim, but we feel that we have been very exacting, and have consequently selected only trees that unconditionally qualify. Eighteen of these trees are in Georgia, 27 in West Florida and 4 in southeast Alabama. Several of our selections have previously been marked by their growers as habitually late bloomers. Trees from three different orchards fall into this category, which leads us to believe, as the slang expression goes, that "we have something there!"

## ADMINISTRATIVE NOTE

California State Tax It has come to our attention that the California State tax collector has issued forms on which to report income for the calendar year 1939 for all residents of California, including Federal employees. This is to inform employees of the Division in California that the Division of Budget and Finance of the U. S. Department of Agriculture will furnish the tax collector of California with the names and salaries of all Department employees stationed in that State.

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La.

"Now that we have finally had sufficient frost to cause the leaves to drop from the nursery trees and the harvest in our nutrient plots is finished, we are able to begin the work of measuring the seedling progenies of the 300 trees selected in the fall of 1938," he writes December 16th.

"There are about 40,000 of these seedlings in the nursery maintained in cooperation with the Bogalusa Tung Oil, Inc., and about the same number at the cooperative farm in Pearl River county. In this land, where from the point of view of agricultural operations there is practically no winter at all, our cooperators will want to begin transplanting this stock early in January. Hence it looks as if we are in for a period of intensive work on this project.

"In this laboratory Mr. Hines has been testing his various pathogenic organisms on a variety of media. Some very vigorous and interesting cultures of the root rot, *Clitocybe*, have been obtained on prune agar. Heavy root-like strands of the fungus extend down into the agar. Plates and test tube slants inoculated both with *Clitocybe* and with an unidentified bacterium, which seems frequently to be associated with it, shows less surface development of the *Clitocybe* but equally vigorous root-like developments deep in the agar. To date endeavors to germinate untreated nuts of the 1939 crop in an incubator have met with no success. However, when the shell was removed and they were placed in a 'rag doll', that is, a roll of cheese cloth and cotton batting, more than half of the nuts produced roots within a week. The shelled nuts were sterilized by treating with Semesan at the rate of 1 tablespoon of the powder to a gallon of water."

## DELAYED SALARY CHECKS

Following the November 23, 1939 holiday and extended Christmas holidays, some of our field workers who are paid from Washington have written to inquire what happened to their salary checks for the first half of November and December. In every case it was found that payrolls had gone in as usual, but because of the great number of checks now being issued by the Treasury Department at Washington any break in the regular routine (such as the holidays periods mentioned) is sure to result in a delay of several days in getting checks to field workers.

We realize that this information is small consolation to the workers involved, but we are confronted with a condition over which we have no control and, unfortunately, similar delays are likely to occur in the future where somewhat similar holiday conditions prevail.

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### THE CARE OF NUT TREES

"At the recent Rockport, Ind., meeting of the Northern Nut Growers' Association, C. A. Reed of the United States Department of Agriculture, discussed some of the factors involved in the successful cultivation of nut trees in the home orchard," says the American Fruit Grower (December), quoted in our Daily Digest. "Climate has a marked influence on tree growth and production, and only those species which have demonstrated their ability to thrive in the region where they are to be grown may be planted with any certainty of success.

"Poor soils are not suited to nut trees, and only the rich, deep soils are suitable for the better species of walnuts and hickories. The tree trunks of all young nut trees, especially if they are tall and exposed, should be protected from the hot sun. This may be done by wrapping with burlap, heavy paper, or a bundle of cornstalks on the south side. All nut trees require full sunshine for good cropping. Close planting and the consequent shading of the lower limbs results in decreased yields. Trees growing by themselves in the open often bear unusually heavy crops. The walnuts, hickories and pecans need from 50 to 75 feet between trees in both directions, chestnuts and Japanese walnuts from 40 to 60 feet and filberts from 25 to 30 feet...Trees grown in poultry yards yield heavy crops and provide shade for the fowls. Whatever the crop, it is more than will be obtained from ordinary ornamentals..."

### NEWS LETTER MATERIAL

A good bit of interest has been shown in the recent discussions of work and facilities at Beltsville, and a number of readers have asked for more. They want to hear frequently, they say, about the progress of things at Beltsville. This seems to be an excellent opportunity, then, to remind you that the News Letter is your paper. The character and contents depends upon your contributions. What you read in it is the survival of the censor gamut. The material received first goes to your section leader, then to Mr. Gould who indicates what portions may be used; and finally to the office of the Chief of Bureau. We consider this procedure desirable in order to safeguard against the use of items that might prove misleading, create undesirable advance publicity, or arouse criticism in some way.

Beltsville items come primarily from the section leaders, and the burden of work upon them--including as it does administrative and budget matters as well as the research problems--is such that they are not apt to remember the News Letter unless you give them a hint now and then that you'd like to see more news concerning the activities of your associates at Beltsville--station facilities and equipment and the like. You'd be distressed if you knew of the low, mean, underhanded methods (such as this!) that the editor resorts to on occasions to pry articles out of them; and you'd also be surprised, once you know them well, how human the average section leader is!

## PROPERTY AVAILABLE FOR TRANSFER

During the past few years the Division of Purchase, Sales and Traffic has been issuing lists of property available for transfer at no expense to the receiving activity other than that connected with the packing, crating and transportation of the items involved. Heretofore our Division has received enough of these surplus property lists to provide a copy for each project leader, but this practice is now discontinued.

Purchase, Sales and Traffic Circular No. 195-39, dated December 2, 1939, states that because of the time which elapses between departmental promulgation of these surplus property lists and the filing of requests for transfer of items selected much of the property has been transferred or cleared for sale by the time the department's requests are received. The Procurement Division is now furnishing one copy of surplus property lists to each bureau in Washington, and in addition will distribute the lists through its state procurement officers to field agencies. You should therefore contact the procurement officer for your state to make sure that your particular activity received the surplus property lists as they are issued. Addresses of State Procurement Officers are furnished on the accompanying sheet.

Upon receipt of the list you should check the items you desire and forward the list to our Business Office, indicating whether shipment should be made by freight or express and the project number to be charged with the transportation or other charges incident to the transfer. A statement should also be included as to the expected use to be made of the property:

- (A) For immediate use.
- (B) Needed to fill current requirements which will necessitate purchase of a similar article if the transfer is not made.
- (C) Request for storage against definitely anticipated needs, commodity being one of current use.

In case the surplus property listed is held in or near your location, if the transfer is approved it may be practicable to have it picked up by your own truck. If so a statement as to this method of transportation should be made in submitting your request.

The surplus list usually shows the condition of the property, whether new, used or in need of repairs and full consideration should be given to such condition before requesting any surplus property. In the case of motor vehicles an estimated cost of repairs is generally given, and the amount of storage charges, if any, which the receiving activity would have to pay.

Upon receipt of your request it will be forwarded to the Procurement Division through your Bureau Property Officer and if the transfer assignment is made we will inform you of the bill of lading number on which it will be shipped.

## Names and addresses of procurement officers as of November 30, 1939:

ALABAMA: Mr. Ernest S. Meyer  
Old Post Office Bldg.  
Montgomery, Alabama

ARIZONA: Mr. Ronald Shero  
Heard Building  
Phoenix, Arizona

ARKANSAS: Mr. Larkin L. Thornhill  
Old Post Office Bld.  
Little Rock, Arkansas

CALIFORNIA: Mr. John W. Knox  
49 - 4th Street  
San Francisco, Calif.

Mr. Fred W. Witt  
1206 South Santee St.  
Los Angeles, Calif.

COLORADO: Mr. Charles R. Franks  
810 - 14th Street  
Denver, Colorado

INDIANA: Mr. Samuel J. Craig  
Century Building  
Indianapolis, Ind.

IOWA: Mr. Hans Pauli  
300 Royal Union Life Bldg.  
7th & Grand Avenue  
Des Moines, Iowa

LOUISIANA: Mr. William B. Edgar  
707 Canal Bank Bldg.  
New Orleans, Louisiana

MAINE: Mr. Charles C. Mooney  
142 High Street  
Portland, Maine

MARYLAND: Mr. Howard S. Grimes  
1735 Baltimore Trust Bldg.  
Baltimore, Maryland

UTAH: Mr. Ralph C. Felsted  
419 Boston Bldg.  
Salt Lake City, Utah

WASHINGTON: Mr. Harry A. Bellows  
Alaska Bldg.  
Seattle, Washington

FLORIDA: Mr. Wilbur E. Harkness  
49 West Duval Street  
Jacksonville, Florida

GEORGIA: Mr. Harry E. Harman, Jr.  
10 Forsyth St. Bldg.  
Atlanta, Georgia

ILLINOIS: Mr. Malcolm W. Milligan  
222 West North Bank Drive  
Chicago, Illinois

MASS: Mr. Aloysius J. Walsh  
Park Square Bldg.  
Boston, Massachusetts

MINNESOTA: Mr. Pearl R. Johnson\*  
1209 Minnesota Bldg.  
St. Paul, Minnesota

MISSISSIPPI: Jules E. McNair  
5th Floor-Tower Bldg.  
Jackson, Mississippi

MISSOURI: Mr. Richard F. Minogue  
310 East Capitol St.  
Jefferson City, Missouri

NEW JERSEY: Mr. Edward B. Erickson  
1060 Broad Street  
Newark, New Jersey

NEW YORK: Mr. Thomas J. Forde  
76 - 9th Avenue  
New York, New York

N. CAROLINA: Mr. John E. Crow  
304 South Salisbury St.  
Raleigh, North Carolina

OREGON: Mr. Hamilton Morton  
Bedell Building  
Portland, Oregon

S. CAROLINA: Mr. John M. Anderson  
Natl. Loan & Exchange Bldg.  
Columbia, South Carolina

TEXAS: Mr. John W. Armstrong  
Smith-Young Tower Bldg.  
San Antonio, Texas

WISCONSIN: Mr. Charles E. Hope  
301 East Wilson St.  
Madison, Wisconsin

WYOMING: Mr. Dwyer F. Smith  
402 City & County Bldg.  
Cheyenne, Wyoming

\*Regional Procurement Office  
South Dakota  
North Dakota

## EMPLOYMENT PROBLEMS

The mother had been helping her little girl with her school problems. When the child came home the mother asked if the answers had been correct. "No mamma," said the little girl; "they were wrong--every one was wrong." The mother was quite upset. "All wrong?" she repeated, unbelievably. "Oh, I'm so sorry." The little girl consoled her, "Well, mamma," she said, "you needn't worry about it--all the other little girls' mammas had them wrong, too." That's the reason we have to bring up employment problems from time to time; the little girls' daddies who work for us get mixed up too, now and then.

Unskilled Laborers Most letters of authorization authorize the employment of unskilled laborers for not to exceed 90 days, Walter Roney points out--and he's an expert at this pointing business. Such employees are usually employed by the day or hour, in which case their total employment should not exceed 90 days or 720 hours, respectively. See! It's just the sort of problem the little girl brought home. Well, when such employees are employed by the month, each month should be counted as 30 days and therefore the laborers may not be employed more than three months, even though the actual number of days on which service is performed does not amount to 90 days. The plot is thickening, you will observe, but a little effort will fix the idea firmly in your mind: When they are employed by the month they are permitted to serve but three months since the month is figured at 30 days, even though may not have used them every day. See if you can get "A" on that problem in future.

As the Bureau restricts employment under letter of authorization to intermittent employment, those employed under letter of authorization are not entitled to annual or sick leave, nor may they be paid for holidays unless they actually render service. This applies also to workers employed on a w.a.e. basis under appointments, as the Bureau restricts w.a.e. appointments to intermittent workers.

Terminating Appointments This problem is somewhat simpler the only thing being to take care that you are in the house before you shut the door and lock it. In requesting the termination of appointments you can hardly give the Business Office too much information, but it is mighty easy to give it too little. And once the door is locked with you (or the retiring employee) on the outside, trouble begins. In particular be sure to state the last day on which the employee will work--meaning that you must take into consideration any annual leave to which he is entitled since no leave can be granted after the termination date of this appointment.

Send along also a statement as to whether the employee's services have been satisfactory. In requesting the termination of an appointment the Business Office must indicate this so that the worker's record is left clear--or otherwise. They call it terminating an appointment without (or with) prejudice.

Vol. 12 No. 2

January 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE



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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI - MONTHLY NEWS LETTER

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
February 1, 1940

No. 3

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Filberts--  
and Pecans

The architects have the words, but we supply the music!'  
A recent literary list mentions a publication issued by the office of the supervising architect, Procurement

Division: "Regional classification of plant materials: Plants found to be satisfactory from standpoints of design, low maintenance cost, and longevity." I judge, coming from an architect's office, that the publication actually refers to building materials and construction, but that subtitle certainly fits C. A. Reed's filbert hybrids--plants found to be satisfactory from standpoints of design, low maintenance cost, and longevity!

This opinion is not entirely my own, nor is it unsupported by trustworthy evidence. The Committee on Awards of the American Pomological Society at the joint sessions of the Society and the Massachusetts Fruit Growers' Association, January 2-5, 1940, at Worcester, Mass. awarded the Wilder silver medal to the collection of filbert hybrids exhibited by C. A. Reed. To fill Dr. Crane's cup of gratification to the brim, the Committee went on to award the Wilder bronze medal to one of our new pecan varieties. This latter award ought to encourage the boys at Albany, Ga., and may even bring Max Hardy down to earth again.

The pecan, of course, has long since won its place in popular favor, so that our chief attention these days is devoted to problems of growing and handling, in order to make the pecan a commercially profitable crop year in an year out. The filbert, however, has been in the background--plenty of natural talent, but no assertiveness--not until Reed & Company took over its management.

The filbert was slow in putting its best foot forward commercially, but it really has been stepping out in Washington and Oregon these past ten years, and is now quite a profitable commercial crop in those States. The new hybrids promise to make filbert growing of much importance in the East as well.

This breeding work was undertaken actively about ten years ago, when 2,500 crosses were made by Reed and Lake in 1927 between leading varieties of filberts then beginning to bear in the Bixby orchard near the southern shore of Long Island. During 1928, and continuing annually for three years, large numbers of additional crosses were made in this orchard, mainly between the Rush (American) hazel, pistillate parent, and such European filberts as the Barcelona, Bolwyller, DuChilly, Kentish Cob, Red Aveline, White Aveline, Red Lambert, White Lambert, Imperial and Brixnut. A good many of the resulting hybrids of highest promise are growing at Beltsville, where perhaps half of the land devoted to nut trees is planted to filberts.

The filbert has been grown in the East as a home plant for many years, of course, and has proved somewhat more hardy than the Persian walnut. Its future is enhanced by the fact that much more progress has been made of late years in improving it than has been made in improving the walnut. Furthermore, wherever the Persian walnut succeeds in the East the filbert is apt to do even better. The trees are quite ornamental, many varieties leafing out early in spring with a rich dark green foliage that keeps until late fall. For family planting the filbert is unquestionably one of the most desirable nut bearing trees available for use in a large portion of the East.

Considering the high quality of the filbert, it is difficult to understand why earlier efforts were not made to develop it as a commercial nut crop. Even as late as the 1920's when Reed and Lake were engaged in their initial breeding work, the filbert was still a commercial nonentity. The new hybrids are apt to correct that situation, for good judges have insisted that some of them have more flavor than even the better of the imported sorts. One prominent international authority on plants of all kinds asserted at Worcester that he was going to write to the Secretary complimenting the Department on the results of its filbert breeding work!

It is interesting to note that this was the first American Pomological Society meeting to be held in Massachusetts in 25 years, although the Society was founded in the middle of the last century by fruit men in New England and the Hudson River valley. Its principal activities of recent years have been in the middle West. The Wilder medals mentioned, awarded for new varieties and collections, are named for Marshall P. Wilder, of Boston, first president of the Society, who gave the fund that makes such awards possible.

## NUT INVESTIGATIONS

F. N. Dodge, Shreveport (Robson), La.

"Data on grade of the nuts this year show that this year's crop has a higher percentage of No. 1 nuts than any previous year," he writes January 13th. "The general average for all Schley samples from the cultural experiment runs 95 percent No. 1, 2 percent nuts with split shells, and 3 percent No. 2 and culls other than the nuts with split shells. In the variety test, Brooks was best with 100 percent No. 1 nuts. Caspiana, Carman, Desirable, and James had better than 99 percent No. 1 nuts; and Moore, Success, Pabst, Zink, Western, Indiana, Major, Van Deman, Odom, Schley and Delmas were all better than 95 percent No. 1 in quality. The poorest grade of nuts was harvested from Bass, Nelson, Mahan, Williamson, Sabine, Burkett and Govett: These varieties had from 70 to 80 percent No. 1 nuts. Some years during my study of the quality of the nuts of these varieties some of them have not had any that would grade U. S. No. 1 in quality."

Paul W. Miller, Corvallis, Oreg.

Writing from the U. S. Fruit Disease Field Laboratory on January 6th he says: "We have had a very mild winter in western Oregon so far this year. The minimum temperature to date has not fallen below 28°F. at Corvallis. Indications point to an early spring, as peach buds are beginning to swell and the catkins on the Barcelona and other early varieties of filberts are elongating and some of them are shedding pollen. The tips of the stigmas of many Barcelona pistillate flowers are now visible but the flowers are not fully developed as yet."

## MANUSCRIPT PREPARATION

Quite a few manuscripts received by Mr. Gilbert recently ignore the requirement that each page end with a paragraph. The Government Printing Office must divide the typed sheets among several operators and this cannot be done where the paragraphs are split--run over to another page. We have to cut the pages and paste them to correct such breaks in paragraphs, which means considerable delay in getting the manuscript to the Bureau's editors. If the author's paragraph is too long to get on a page, double-spaced, it may be possible to type part of it single spaced to get it on. If it is still too long, the typist should paste the sheets to have the complete paragraph on one.

Remember, too, that text figures must be referred to in the manuscript. Type the description of the figure (legend) immediately below the first reference to it in the manuscript, setting off the legend by ruled lines:

Fig. 1.--The, etc.

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"The thousand-hour mark in cold accumulation here was passed at 8 a.m. this morning," he writes Dr. Cullinan on January 22d, "more than a month ahead of schedule. The lowest temperature of the winter, 13°F., occurred the morning of January 20th. All varieties of peaches are quite dormant, due to the cold weather of the past four weeks, and no bud injury is anticipated."

He had written January 8th: "During the past two weeks 270 hours of cold occurred at the laboratory, bringing the total for the season to 756 hours. The average for January 8th is 570 hours, so that the season is about 18 days early as far as cold is concerned. The prospect is therefore, if temperatures in January and February are normal or above the average, the blossoming period in this section will be early, as it was in 1938.

"A series of dormancy-breaking sprays were applied to five varieties of peaches at Albany, Ga. last week, and will be repeated at weekly intervals. An organic salt, triethanolamine, of DNO is being used in one spray. It has the advantage over inorganic salts that are slightly soluble, of being soluble in water in all proportions, and so facilitates the mixing of the spray. Sprays were also applied at Fort Valley and Marshallville, though again at these locations ample cold weather may cause them to be of little benefit."

R. B. Wilcox, Pemperton, N.J.

"The annual meeting of the Blueberry Cooperative Association was held January 12 at Pemberton," he writes January 17th. "The 1939 crop shipped by the Association, which includes most of the growers in New Jersey, North Carolina and Michigan, was placed at about 20,000 bushels, or quite a reduction from that of 1938. The reduction occurred in New Jersey and was largely the result of the heavy frost of May 15th. At the directors meeting Theodore H. Budd, who has been president of the Association for several years, was succeeded by Stanley Coville."

C. O. Hess, Davis, Calif.

"It has rained nearly every day the past week, with a real storm over the week-end," he reports January 8th. "The total rainfall figures to Monday 8 a.m. are 1.39 inches for the storm and 5.25 inches to date. We are rapidly catching up on the normal, which is 6.70 for this date. The 1st and 2d of January we had the first real rains we have had in nearly two years. The rain was general throughout the State and certainly did untold good."

## DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"While on annual leave during the months of October and November, I had an opportunity to see much new country and some experimental work," he writes December 31st. "It was especially interesting to observe the reported anthracnose disease in Maine. The form of the organism seemed to vary slightly from that on the Pacific Coast, but the cankers were typical. A general feeling was obtained that the disease is probably the same as ours or a strain of it. Considering the environmental conditions and tree vigor, however, it seems doubtful whether the disease will attract more than spasmodic interest.

"The visit to Beltsville and Washington was both instructive and interesting. Mr. Fisher could easily qualify for the Coulee Dam Club with the figures he rattled off on cold storage equipment. The work of our Division is much more interesting after the visit to Beltsville.

"The general drought condition noticed in all sections of the northern United States during the fall is still with us at Hood River. The driest year on record was missed by only 2 inches of rainfall, the record not being broken until December 28. The total rainfall was 18.49 inches compared to a normal 32.04. A new record dry April was recorded, with .02 of an inch rainfall. Snowfall and glacier reserve for irrigation purposes on Mt. Hood are the lowest in the memory of the white man. According to the long-time cycle forecasts, however, a distinct increase in rainfall should be apparent in the next few years.

"A number of samples of the Delicious and Esopus Spitzenburg apples have been submitted to us for a determination of the soft rot invading the fruit. This has always proved, by cultures made from the fruits, to be blue mold. On the Spitzenburg the rot generally affected the calyx region and on Delicious both lenticel and calyx type infections were common. Much of this injury probably originated at washing time, by the use of heated acid baths; but certain lots show the rot more commonly year after year, no doubt influenced by some unknown cultural practice in the orchard.

"The black-knot condition of cherry trees has been located in three Hood River orchards besides being common at the Dalles. A series of isolations from this material again yielded sterile cultures in December. From a close examination of these trees, a slight resemblance can be imagined to the rough bark condition of stony pit on pears. It may be worthwhile to try some transmission experiments on healthy cherries.

"A survey of orchards in the Wenatchee district made by Dr. Moore primarily for pear Psylla work is of interest. Only orchards where fruit still remained on the tree could be definitely classified, but of these 27 percent showed stony pit fruit, mostly on the Bosc variety. This included over 7,000 trees in 65 orchards."

## SUBTROPICAL FRUIT INVESTIGATIONS

W. W. Aldrich, Indio, Calif.

"Following unusually warm weather for November and December, freezing temperatures finally occurred on December 26th and 27th in the colder areas throughout the subtropical fruit districts of the Southwest," he writes from the U. S. Date Research Garden.

"These two cold nights required George Leach (working foreman at the U. S. Date Research Garden) to light our new orchard heaters in the papaya plantings for two to three hours. Even with a minimum of 32°F. at a height of five feet inside one planting, upper leaves were injured on several papaya plants.

"Of our three papaya plantings (in lath-house, in shade of old date palms, and in open), the planting in open has resulted in the most satisfactory production of plants and fruit. In lath-house plants (from seed planted March 28, 1939) are from 10 to 12 feet tall, but set of fruit has been light or nil. In shade of old date palms, plants are slender, 4 to 6 feet tall, and have 0 to 6 fruits per plant. In the open, plants are stocky, 4 to 7 feet tall, and have set 5 to 12 fruits.

"Of the three varieties (Orlando, Fairchild, and Florida) planted in 1939, Orlando developed most rapidly from seed, but was definitely the poorest in setting fruit. Florida, slow in starting and in subsequent growth, showed tendency to set more fruit than the other two varieties.

"Mr. Crawford started hand-pollinating papayas on September 23. Fruit set immediately, now weigh about 1 to 1-1/2 pounds, but is not eating-ripe. Apparently, our fall temperatures (higher than usual) did not cause ripening within 90 days after pollination. The 90-day period from March 1 to May 30 may be much more effective.

"In anticipation of early flowering (early rather than late in February) of dates, we are rushing reconditioning of field equipment and detailed plans for spring and summer research. T. Roy Young, Jr. and C. L. Crawford are pushing chemical analysis to give some preliminary ideas upon amount and location of carbohydrate reserves in the date palm. Roy W. Nixon is finishing a detailed analysis of six years' data upon fruit and bunch thinning. Mr. Moore completed the harvesting of fruit in our date irrigation plots in the Cavanagh garden. Differences in quality of fruit from different plots were, I suspect, rather largely influenced by humid and rainy weather in September."

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**BREEDING POTATOES BY ELECTRICITY!**

So far as we know, there is little if any direct evidence tying up the hen and the eggplant. When it comes to a question of the hen and the potato, however, it is another question. It was his recognition of a certain similarity between the hen and the potato or vice versa that led Dr. Henry A. Jones to apply electricity to the breeding of potatoes.

Yes, a statement released to the papers late in December by our Press Service reveals that Dr. Jones has found that the potato, like the hen, works longer hours in winter under artificial light. Hens it is, so to speak, that under 60-watt bulbs from sundown to 11 o'clock at night the potatoes respond as though the daylight hours were longer.

It's been three years now since Dr. Jones set out to make a greenhouse "climate" similar to that of northern Maine and upland Colorado. Only by growing the plants during the cool season of the year could the temperature conveniently be brought down to the proper low level of 45° to 50°F. at night and 70° by day. At this time the days were too short and the plants did not get sufficient sunlight. Then it was that Dr. Jones thought of hens and called electricity to the rescue.

"Producing true seed from a potato plant is the chief means of breeding new varieties," says the statement. "With potatoes each seed represents a potential new variety. Unfortunately, the potato plant seldom produces seed in the field outside of a few favored areas--chiefly northern portions of Minnesota, Wisconsin, Maine, and the Colorado highlands. Even here a few cloudy or hot days or dry winds are likely to blast young buds and the potato breeders lose a full year's work. A few new varieties have been produced by mutation, but as yet the production of mutations cannot be controlled and it has been used but little in the development of new varieties..."

At Beltsville this artificial greenhouse "climate" has produced larger and more uniform seed crops than under good field conditions similar to those existing in Maine and Colorado. Some varieties such as the Chippewa, which heretofore would not produce seed under field conditions, have borne good seed crops when given 16 or 17 hours of continuous light under cool, humid conditions in the greenhouse. "Thus the scientists have now a sure way of producing potato breeding material," finishes the statement.

And thus the potato breeding work continues to be an outstanding illustration of what Kipling calls "the everlasting teamwork of every bloomin' soul." We call on the plant introducer to bring in potatoes carrying the genes of disease resistance; the home economist to test the cooking quality; the plant breeder and horticulturist to make the crosses and grow the progenies; the pathologist to study diseases; and the field and station men to test out promising new varieties under the widest possible range of climatic and soil conditions. And now we have put the electrician to work!

## U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman, vegetable crop investigations.

"The Laurel Starch Plant closed for this season last week," he writes January 13th, "and it is gratifying to have Manager Richee report that potatoes dug from his delayed harvest plots only a few days since analyzed 18.32 percent starch. The plots from which this harvest was made were on low and rather heavy land and the potatoes were actually under water when dug....."

"Apparently, our much talked of delayed harvest practice has held a strong position with sweetpotato growers for starch production in the Laurel, Miss. area this season....From all reports and observations, this has been a most satisfactory season with the Laurel Starch Plant--the longest season of operation, tonnage production in starch approximating 2,700,000 pounds and field and quantity application of delayed harvest suggesting that this practice might be largely responsible for extending the operating season of the plant from 30 to 40 days into winter."

N. H. Loomis, small fruit investigations.

"The results of our grape varietal work emphasize the fact that the only likely way to obtain vigorous varieties on their own roots is through breeding and hybridization of the native southern grapes. The few satisfactory varieties that we have here are at least partially of southern origin except in a very few cases, and the good varieties of the North and Middle West are almost without exception worthless here, when grown on their own roots. Good root stocks such as Dog Ridge, and Aramon x rupestris Ganzin No. 2 have given good results when grafted to varieties that are worthless on their own roots. Many rootstocks have been found to be poor or worthless here."

## ADMINISTRATIVE NOTE

Jurats and Signatures Since the beginning of the year the Business Office has been obliged to return five or six expense accounts because the jurats were not completed. In some cases the entire jurat was left blank; in others only the postmaster had signed; and in still others the date or the postmaster's stamp were omitted. A little care in checking the jurat will assist the Business Office in obtaining prompt payment of such accounts. And do not overlook the matter of correctness in your signature--that is, you must sign the account with your given name in full (John H. Doe, not merely J. H. Doe). The Treasury Department will not issue checks unless given name is in full, so we must return accounts for completion of signature.



## PURCHASES LATE IN YEAR

For the past 35 or 40 years, Roy Gillette has been pointing with alarm to the tendency of purchasing officers to put off sending in orders until late in the fiscal year--probably, in many cases, because they were never sure until June 1 that they'd have money enough left to make the purchases involved. Be that as it may--and those are his words, not mine--it is vitally important that employees who have authority, and intention, to purchase supplies begin to spread their orders RIGHT NOW! Send in at once any items that will require bids (even though the actual purchase may be held up until later, the bids can be obtained now). The deadline for consideration of bids in the Department is June 15--which means that we must have them 10 or 15 days earlier to get them in shape for action by the Division of Purchase, sales and Traffic.

Incidentally, the Budget and Finance office has just sent out a memorandum pointing out that a study of purchasing orders, bid awards and the like reveals that they reach their peak the last quarter of each fiscal year--and that about half the bid awards made during the quarter come after June 1. While that office appreciates the fact that husbanding of funds as a reserve against possible emergencies, preparation for seasonal programs, and other factors entirely consistent with principles of good management may tend to concentrate purchases during the latter part of the year, it does appear that stabilized operations over a period of years should create a pattern that will enable a logical forecast of the major procurements to be made. A good many advantages would likely result from avoiding this rush at the end of the fiscal year, entirely aside from the relief it would afford the administrative workers in the Department.

However, the Director of Finance has gone a bit farther than the mere suggestion of the desirability of spreading purchases: He has instructed the Division of Purchase, Sales and Traffic to refrain from opening bids after June 15 of a current fiscal year, and to withhold acceptances of bids opened after that date by other agencies, unless such action is, in fact, necessary to meet an emergency. In that event the papers must be accompanied by a whole lot more convincing statement of the circumstances involved than you would likely be able to prepare, justifying departure from standard procedure. Not only that, but the Director requests that beginning right now the offices of the Department adopt for purchases made directly rather than in connection with the Division of Purchase, Sales and Traffic (on bids, that is) a policy of spreading purchases in a way to avoid this last minute rush. Please make it a point, then, to do everything practicable to foresee purchases and initiate action early enough to avoid or at least substantially reduce the spring rush. And where bids are to be obtained--get 'em in now even if actual purchase is to be made later.

## ADMINISTRATIVE NOTES

Political Activity We expect to have ready for distribution shortly a circular from the Department's Office of Personnel covering the subject of political activity and including interpretations of the Hatch Act by the Attorney General. In the meantime it may be well to state, roughly, that employees of the Department are permitted to make voluntary contributions to a political campaign fund or voluntarily to purchase tickets to political dinners and functions, such as the recent Jackson Day dinners, but they must not solicit or receive such contributions or sell such tickets, and in no case shall such solicitations (that is, even by persons not employed by the Government) take place in a Federal building. There is, of course, nothing in the law that would prohibit an employee from attending such an affair as the Jackson dinner, though we are prohibited from taking any active part in political management or in political campaigns.

## METHOD OF CALCULATING PER DIEM

Continuous travel of more than 24 hours:--Paragraph 51 of the Travel Regulations states that in computing per diem in lieu of subsistence for continuous travel of more than 24 hours, the calendar day (midnight to midnight) will be the unit, each six-hour period, or fraction thereof, will be computed as 1/4 of the rate for a calendar day. For instance, on a trip beginning at 7:30 am. January 9 and ending at 3:30 pm. January 12, the per diem would be calculated as follows:

January 9	-	3/4 day.
" 10 & 11	-	2 days.
" 12	-	3/4 "
		<u>3 1/2 days @ \$4.50, \$15.75.</u>

Continuous travel for less than 24 hours:-- For travel of less than 24 hours (other than the ten-hour period between 8 am. and 6 pm.) the time is counted from the beginning to the end of the trip and for each six-hour portion of the period, or fraction thereof, 1/4 of the rate for a calendar day will be allowed. For instance, for absence from station beginning at 7 am. and ending at 9:30 pm., the time of absence would amount to 14 1/2 hours, which divided by 6 would give 2 full quarters and a fraction so that 3/4 of a day's per diem might be claimed.

It often happens that in order to conserve funds for other work the traveler wishes to claim only sufficient to cover his actual expenditures. In such cases the total for subsistence expenditures should be divided by the correct time as counted for per diem and the rate thus determined claimed in the account. For instance, on the trip mentioned in the first paragraph above if the actual cost of the trip were \$9.45 the claim should be submitted as 3 1/2 days at \$2.70, \$9.45. In such cases it is necessary to add a statement in the expense account to the effect that the per diem claimed covers all expenses and no further claim will be made for the per diem in question.

## PERSONAL MENTION

Beltsville had visits from two members of our field staff following the meeting at Columbus, O. of the American Association for the Advancement of Science. Dr. L. A. Schaal of St. Paul, Minn. and Mr. B. F. Dana of Corvallis, Oreg. spent several days conferring with their respective section leaders and staff members. Later Mr. Dana went to Charleston, S. C. to confer with workers on disease resistance problems at the U. S. Regional Vegetable Breeding Laboratory.

Dr. Lee M. Hutchins recently left Beltsville for Brownwood, Tex., his temporary headquarters while conducting investigations of virus diseases of tree fruits in the Southwest. Enroute he stopped at points in Georgia, Kentucky and Arkansas to meet with staff members and cooperators.

According to Dr. Magness, he has been on a Chautauqua circuit the past month, having delivered papers or addresses before the Massachusetts Fruit Growers Association, the western meeting of the New York State Horticultural Society, the Pennsylvania Horticultural Association, and finally discussing "A Survey of the Apple Industry from the National Point of View" before the eastern New York State Horticultural Society on January 26th.

Dr. V. R. Boswell has returned from a field trip to Texas, Arizona, California, Louisiana, and Mississippi, where he conferred with staff members, collaborators and cooperators regarding plans and progress of the vegetable investigations.

Messrs. Edwin L. Blich, Charles L. Zimmerman, Jr., and Paul C. Grimball of the U. S. Regional Vegetable Breeding Laboratory, Charleston, S. C., are spending a week at Beltsville and Washington consulting with section leaders and familiarizing themselves with certain techniques in scientific work.

Mr. D. F. Fisher left on January 10th for a trip to Florida, Washington, California, Texas, Missouri and Illinois to confer with members of his staff, railroad officials, growers and shippers relative to cooperative investigations on the handling, transportation and storage of fruits and vegetables. While in Chicago he will attend a meeting of the American Society of Refrigerating Engineers.

Dr. Ezra J. Kraus of Chicago was a recent visitor at Beltsville in connection with his work on plant hormones and his length-of-day studies. He was accompanied by Dr. Karl C. Hamner, associated with him in Chicago, who is also a collaborator in the hormone and length-of-day work.

Vol. 12 No. 3

February 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASE

S E M I - M O N T H L Y   N E W S   L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and other represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Vol. XII                    U. S. Horticultural Station, Beltsville, Md.                    No. 4  
February 15, 1940.

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Annual Report    The practical efficiency of agricultural research rests to a large degree upon the extent to which its findings are made promptly available to those who need and can use them effectively. This includes not only publication but also the building up of a store of information that may be used in the preparation of replies to the numerous appeals for assistance that come to the Department. Sometimes as many as a million inquiries reach the Department at Washington in a single month.

In his annual report as Chief of the Bureau of Plant Industry, Dr. Auchter emphasizes the importance of the rich background of long-continued experimentation that enables the Bureau to meet adequately such requests for information--requests that reach us from producers, shippers, dealers, processors and consumers of plant products not only in all parts of the United States, but from foreign countries as well. The results of plant research, Dr. Auchter also points out, are now being utilized to an increasing extent in connection with human and animal nutrition and public health.

While contributing our full share to this fund of basic information, we are also well represented in the list of 148 publications (136 new and 12 revised) contributed to the Department series during the year, and the 535 papers published in outside journals. Our contribution is about 30 percent, some 200 papers in all. In addition, we have prepared a dozen or so informal mimeographed "briefs" during the year to meet emergency situations or to supplement correspondence. There is an amazing demand for publications, as many as 100 requests having been received by Mr. Gilbert in a single day for the market disease publications, for example.

The report, issued the middle of January and covering the fiscal year ended June 30, 1939, touches on the highlights of research results during the year, including the practical control of biennial bearing of apples under northwestern conditions by early fruit thinning. Proper adjustment early in the season of the quantity of fruit to the leaf system of the tree has resulted in sufficient bloom the following spring with minimum reduction of the current crop. Encouraging, too, is the statement that during the year the apple breeding work of the Department and of nearly all the actively interested State agricultural stations was thoroughly organized as part of a national fruit breeding project.

The report mentions the introduction of the Waite pear, a highly blight-resistant seedling developed in our early hybridization work. It is of good texture and quality and appears especially desirable for canning. The Close apple, a very early red variety, was also released to nurserymen for propagation during the year as were three new peach varieties resulting from the fruit breeding work in California; a new papaya variety; two new almonds and four new strawberries. Incidentally, the Blakmore strawberry, introduced by the Division only 10 years ago, is now the leading variety in the United States in point of acreage.

Two new lettuce varieties were introduced, and the Imperial No. 44 lettuce, released in 1938, proved to be very satisfactory under a wide range of conditions in the Eastern States, particularly on the muck soils of New York and in the Sanford, Fla. district. Tomato variety trials in the central Great Plains area brought to light two outstanding varieties; and an early-maturing variety of pumpkin, Early Cheyenne, was introduced. This is of small size and good quality and is earlier than any good pie pumpkin previously offered in the trade.

It was demonstrated during the year that Easter lilies may be brought into bloom at almost any time of the year provided the bulbs are given the requisite preplanting low-temperature treatment as a primary control.

Of outstanding interest in connection with the potato breeding work was the demonstration that plants will flower abundantly and produce seed well under controlled greenhouse conditions when given supplementary light. The artificial greenhouse "climate" has actually produced at Beltsville larger and more uniform potato seed crops than under good field conditions in Maine and Colorado.

Interesting developments in connection with the production of starch from sweetpotatoes show that in the latitude of the southern half of Mississippi it is practicable to leave sweetpotatoes intended for starch manufacture in the soil undisturbed for as long as 6 weeks after the first frost--thus relieving gluts to the starch plant and helping prevent losses in the raw stock. Also storage studies show that it is practicable to keep potatoes for starch manufacture in common storage for 3 months after digging, without curing, or after only very short curing periods.

## DECIDUOUS FRUIT INVESTIGATIONS

Lee H. Hutchins, Brownwood, Tex.

"Weather has been extreme for Brownwood during the past week," he writes January 27th. "Five inches of snow fell Sunday night January 21 and the ground is still covered. Temperatures have been well below freezing every morning and on Tuesday, January 22, the official thermometer registered 5.5° below 0, Fahrenheit. Large icicles are still hanging from roofs and there is still ice on the streets in shaded places."

(Editorial Note.--The mills of the gods grind exceedingly fine--and don't let any one convince you that they grind slowly! Dr. Hutchins has been spending some weeks at Beltsville, but when we staged below zero weather and a 10-inch snowfall, he decided that he must hurry away to Brownwood--though he camouflaged his reason by planning his return by way of Georgia, etc. Reports from Georgia elsewhere in the News Letter indicates the sort of reception he got there--but Brownwood--that was the final blow! What he found there was 5 inches of snow and a thermometer (not broken) that registered 9.5° F. So we are expecting him back at Beltsville any day! -- JAF).

R. B. Allyn, Medford, Oreg. (Duty of water investigations)

Writing from the Medford Experiment Station on January 20th, he says: "During the week a new form of soil stability meter (stabilimeter) was designed and constructed for use in determination of orchard soil moisture conditions. This device utilizes the principle of the availaneter but makes the soil moisture determination in place, at any depth, without the necessity of removing a sample core of soil as in the availaneter method. The device has not been adequately tested as yet, but will be given preliminary trials within the next few days. If it should prove successful, its chief advantages over the availaneter will be in less exacting work where much greater speed will be possible. Furthermore, it will eliminate the use of the soil tube."

John C. Dunegan, Fayetteville, Ark.

"The cold wave that covers most of the country east of the Rocky Mountains continues unabated and here in northwest Arkansas everyone is hoping that there will be some relief in the immediate future," he writes January 27th. "The temperatures have been below zero a number of times but lower figures have been recorded in past years and it is the prolonged continuation of the cold weather that is the unusual feature. Water pipes are frozen in many parts of Fayetteville and are causing great inconvenience....Peach shoots collected at the University of Arkansas farm at the end of last week and examined during the week by students in the Horticultural Department show very extensive mortality."

## DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunagan (continued)

"The severe winter weather was replaced early in the week by much milder weather," he reports February 3d. "We collected, on February 1, samples of peach buds in four orchards from the Springdale area and examined the buds. The results are listed below:

Orchard	Variety	Age	Fruit Buds			Percent	
			Total	Dead	Alive	Dead	Alive
Orchard #1	Elberta	4 years	490	439	51	89.6%	10.4%
2	"	15 "	534	484	50	90.6	9.4
3	Belle	8 "	530	462	69	87.0	13.0
4	Red Bird	5 "	645	394	251	61.1	38.9

"These figures show extensive freeze injury to the Elberta and Belle varieties. The Red Bird variety, while injured, still has sufficient buds for a crop. The spring-like weather only lasted for a few days and we had snow again on the 2d and a sleet storm this morning."

## NUT INVESTIGATIONS

C. L. Smith, Brownwood, Tex.

"During this week the work at the station has been strictly confined to the office," he writes from the Pecan Field Station January 27th. "The weather has been cold with minimum temperatures of -6°F. to about 19°, and with a maximum temperatures at slightly above freezing on some days. A 5- or 6-inch snow fell on Sunday night, January 22d, and remained for the greater part of the week. The low temperatures, together with inadequate heat, naturally slowed down accomplishments. However, the furnace, which was put out of commission by the fire on December 16, is now being re-installed and we hope to have it in operation by next Monday morning...The barley cover crop on the station looks sick since the snow has melted off of it, but it is yet too early to tell whether the low temperatures damaged it severely."

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on February 3, he says: "On Monday, Tuesday, and Wednesday a very interesting and instructive trip was made by G. F. Mozzette, J. R. Cole and myself to Orangeburg, S. C., where talks were made in our respective fields of work to pecan growers, county agents, and extension workers. Those in attendance totaled about 60 with about two-thirds of these growers representing approximately 20,000 acres of pecan orchards and two large nurseries. This meeting was the most animated I have ever attended and it was my experience to stand on the floor answering questions for about two hours. The other members of our staff at the meeting had similar experiences. We believe we were able to give these growers definite help and feel that the time spent was worth while from all standpoints."



## NUT INVESTIGATIONS

Max B. Hardy (continued)

Writing January 27th, he said: "This section of the country experienced another week of below normal temperatures. We had no precipitation of any kind here but there has been a considerable fall of snow within 40 miles north of us. The coldest night for many years occurred on Friday with a low of 10.5°F. We have had almost two weeks of nightly freezes and on most days the temperature has risen but a few degrees above freezing. We will watch with interest the effects of this cold weather on pecans and other plants. It is doubtful if there will be any injury to pecans and most other plants except tung, and there may be considerable benefit. The conditions prevailing may allow us to settle some of the controversial questions related to dormancy in the pecan."

He had written January 20th: "During the latter part of the week temperatures dropped to the lowest reading the writer has experienced during his 8 years' tenure here. The lowest reading was on Saturday morning when a temperature of 13.5°F. was noted, which was followed on Sunday morning by a 17° reading. Above freezing temperatures during Friday, Saturday and Sunday totaled only a very few hours. A slight drizzle on Friday morning caused the formation of a light sheath of ice over all exposed surfaces except pavements. While we have no definite records available it is our opinion that we have had more hours of cold this winter than in any year in the past decade....Cover crops are generally fairly good in appearance in this section. At Philema, our best appearing stand of cover crop at this time is the Augusta vetch plot in the Brown orchard, a fact that belies somewhat the general idea that this vetch will not do very well this far north. Of course, the future development of this plot may change our present opinion regarding it."

John H. Painter, Cairo, Ga. (Tung investigations)

"The end of the week found us in the midsts of a genuine cold wave," he writes for the week ending January 20th. "A minimum temperature of 13.5°F. occurred on the night of January 19th. We had temperatures ranging below 16° for over 4 hours and below freezing temperatures for over 50 consecutive hours. The weather has not subsided enough as yet to enable us to know definitely how much damage, if any, has been done. It is reported by several old timers that this is the coldest weather this part of Georgia has experienced since the advent of tung. One native son insists it was the coldest in 50 years. However, this is based on memory and so cannot be quoted as Gospel truth. Very few houses have running water, as a result of this freeze; and this report is being dictated similar to a fireside chat! At least we can see the fire in the fireplace if we can't feel it. A good Yankee overcoat is being worn at the time of dictation--1 p.m. Aside from this, all is well in Cairo."

On January 27, a new low of 11°F. was recorded.

## NUT INVESTIGATIONS

A. F. Finch, Tucson, Ariz.

"At this time we are busily engaged in chemical analyses of pecan nuts harvested from the plots on the Yuma Experimental Farm," he writes January 18th. "Again this year the plots in which the trees were pruned in the early summer to eliminate as much shade as possible and given treatments to limit available nitrogen have produced the best filled nuts with highest oil content. Cultural treatments to give an abundance of nitrogen during the summer have given mediocre nuts while very poorly filled nuts of low oil content have been produced by trees under an artificial shade given summer nitrogen. In old commercial orchards where nut filling has been poor, trees were pruned in the early summer to admit more sunlight. Nuts from these were substantially improved over those produced by the unpruned trees.

"We feel that the problem of filling as it exists in this State is pretty largely solved and believe that the shade within the tree or orchard is one of the most important factors contributing to poor filling. The Burkett variety has given more trouble than any other and we doubt if it will be possible to make it fill satisfactorily for commercial success in the Yuma Valley. Pruning has been found to be very effective, but it is impossible to eliminate all of the shade and the nuts borne in the shady parts of the tree are poorly filled causing the percentage of culls to run high.

"The Mahan has responded well to treatments and produced very satisfactory commercial nuts where the trees have been opened up well and nitrogen limited during the summer. One grower in the Yuma Valley claims to have netted \$150 per acre from a 6-year-old Mahan orchard the past year.

"Through cooperation with county agricultural agents yields of trees in some of the different valleys of the southwest have been obtained. While it is impossible to make accurate comparisons because of differences in age, culture, irrigation, and other conditions, it is quite apparent that higher yields have been obtained on such varieties as Success and Schley in the higher elevations where more winter chilling occurs. One 10-year-old orchard in the Safford Valley which has an elevation of 3,000 feet averaged 125 pounds per tree for Success and 70 Schley--much better than in the warmer valleys.

"Marketing of the 1939 crop proceeded in a very orderly fashion this year and returns were quite satisfactory to the growers. Various prices to growers have been heard. The Mahan appears to have brought from 25 to 50 cents a pound; Success, Schley and Burkett from 17 to 30; and other varieties from 15 to 20 except Halbert which sold at from 8 to 12 cents per pound. The new nut handling and cracking plant at Yuma has handled a large proportion of the tonnage of unshelled nuts as well as those for cracking."

## FUT INVESTIGATIONS

F. N. Lodge, Shreveport (Robson), La.

"We have had one low of 5°F., one of 6° and others up to 17°," he writes January 27th, from the U. S. Pecan Field Station at Robson. "In the past 10 days we have had 13 hours above freezing, with a maximum temperature of 37°F. The freeze has seriously injured the foliage of everything that had foliage, and our cover crops look pretty sick. I am expecting a serious loss of them.

"This week I have completed the financial statements on the Cultural Experiment. All plots except the ones in Bermuda sod have returned a profit for the Schley and Success trees. The loss from Schley and Success trees in Bermuda has amounted to 95 cents an acre. The returns per acre for rent, management, and profit for the Schley and Success trees given 3-inch summer cultivation with a winter legume varied from \$35.15 per acre on the poorest plot, to \$57.46 per acre on the best plot; with an average of \$49.12 per acre. Since this orchard is only 9 years old, this record should show the financial possibilities of pecans when given proper care.

"The plots with cotton as an intercrop returned \$7.32 more per acre than did the paired plots which were given 3-inch summer cultivation with a winter legume. It is interesting to see that the difference between these two treatments is becoming less each year. Part of the reason for this is due to the reduction in cotton yields because of the trees being larger, and part is because of the reduction in yield of pecans caused by the cotton. It is apparent that the time is not far distant when the use of cotton as an intercrop will not be profitable in these plots.

"All other treatments were less profitable than the 3-inch summer cultivation with winter legume. Where a summer intercrop of velvet beans was grown the reduction in returns for rent, management, and profit amounted to \$12.50 per acre. With 6-inch cultivation it amounted to \$10.31. Where the winter cover crop was not turned until late the reduction amounted to \$8.21 per acre. Where rye was used as a winter cover crop the reduction in the returns for rent, management, and profit amounted to \$36.64 per acre, and where the trees were growing in Bermuda sod there was a reduction of \$42.55 per acre.

"The orchard maintenance cost of the plots receiving 3-inch summer cultivation with a winter legume was \$3.18 more per acre than it was for the plots in Bermuda sod. Thus, an additional expenditure of \$3.18 has returned a profit of \$42.55, or more than 1300 percent of the additional expenditure."

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**NUT INVESTIGATIONS**

Paul W. Miller, Corvallis, Oreg.

"Relatively mild temperatures continue to prevail in western Oregon," he writes January 27th. "January 15 I attended a meeting of walnut and filbert growers at Eugene, Oreg. and gave an informal talk on walnut and filbert blight and their control. Approximately 50 persons, mostly filbert growers, were in attendance. The walnut growers are not turning out to these extension meetings as they did five or ten years ago. It is believed that the present economic situation is responsible for the relative lack of interest on the part of walnut growers as a whole and the increased interest on the part of filbert growers. The price of walnuts has been relatively low for the past several years, while the filbert growers have been getting comparatively good prices during the past few years for their crop, which this year is completely sold out."

Milo W. Wood, Sacramento, Calif. (January 27, 1940)

"There seems to be much interest in the new Jordanolo and Harpareil almonds.--And although nurserymen propagated quite a lot, it looks as through the demand will exceed the supply...After a very warm dry spell, very cold weather has prevailed except when we have had rain. During the last few weeks we have had a great deal of rainy weather and this rain is continuing at the present time; we have even had more rain than is desirable and at one time the rivers were exceedingly high. I understand that we are now above the normal rainfall for this time of year and since the rainfall was much below normal until recently it is clear that it has been heavy this month...Almonds will soon begin to bloom; in fact a few of the early blooming varieties are showing signs of opening their buds. If warm weather follows the rains I expect different varieties to bloom in rapid succession."

Felix S. Lagasse, Gainesville, Fla.

"The news of most importance here during the past week was the extremely low temperatures experienced," he writes January 27th. "Residents and newspapers proclaim it as the most prolonged cold spell since the freeze of 1899. The lowest temperature recorded in the Gainesville area was 9°F. on last Sunday morning. Buds of tung were examined and some placed in water to observe injury and development after the first two nights of low temperature. No serious injury has been observed to date in this group. Inspection of buds in the field shows practically no injury to date, although the advent of a few warm days may change this picture some...The cold weather has caused considerable splitting of trunks. Based on past experience, however, these should heal rapidly and, in most instances, will not result in loss of the tree."

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"The weather continued cold throughout the week and a minimum of 80°F. was recorded January 27th. The lowest temperature the previous week was 10°. A considerable number of twigs gathered January 19, after exposure to 13°, and on January 20, after exposure to 10°, show distinct signs of injury in the other region of the pith. Latex ducts in this area are decidedly discolored. However, in the xylem, cambium, phloem and cortex, the tissues were almost always perfectly normal. It is believed that the injury observed in the pith will have little or no practical significance.

"The flower buds are covered with a sticky, gummy exudate within which most of them are still sound. Here and there one may find a dead bud and on some terminals that had been exposed to 10°F. about 10 or 15 percent of the buds are dead. It is doubtful if a practical grower would ever miss this proportion of the blossoms. One terminal was found on which about two thirds of the buds were dead....

"Dr. McCann continued his studies on development of the female tung blossoms during summer months. His observations tend to confirm his previous opinion that the flowers develop only to a limited extent until after the cold winter months."

He had written January 20th: "We confess to having been a wee bit nervous for fear the tung orchards would be so severely injured that we would have nothing left to do but, like the Arabs, fold our tents and silently steal away--to the North where the winters are less severe!. However, the trees had been well natured during a long dry autumn and since about January 1st had been exposed to consistently low temperatures, ranging down to 20°F. Outdoor temperatures have consistently remained low, hence oxidation of any injured tissue has been retarded. In the orchards little or no injury has been found to date.

"Realizing that new lows might be registered in succeeding days, samples of twigs from bearing trees were brought to the laboratory in order that we might be able to observe buds exposed naturally to different degrees of freezing....

"Laboratory tests of the resistance of twigs to low temperatures have shown that after exposure to temperatures of 15°F. or lower, buds start growth very rapidly when placed under favorable temperatures. This leads us to believe that should warm weather follow the cold wave a rapid development of the buds may take place and the danger of injury to the flowers by late spring frosts will be correspondingly increased.

"At present, however, we feel reasonably optimistic, not only as to the trees themselves, but also for the crop of fruit in 1940."

## CHEYENNE HORTICULTURAL FIELD STATION

Turning from the reports of our "tropical" field stations in Georgia, Louisiana and Texas, we present the information from Dr. Hildreth that on January 20th a cold wave reached the Cheyenne station dropping the temperature to 19 below zero! The subzero weather continued throughout the week and brought some moisture in the form of snow. The ground has been covered with a few inches of snow since Christmas, but the total moisture since the third week of December is but .73 inch, although there have been several light snowfalls during the period. Moisture is still needed badly throughout the State as various reservoirs are dangerously low and very little snow has fallen in the mountains until the last few weeks. With these conditions in mind, it is rather amazing to read the report of activities!

"Dr. Babb reports that early cuttings were made from rhubarb plants that are being forced by methods designed to measure the influence of certain nutrients on the quantity and quality of the forced product. Analysis of variance on the data on sugar determination in pumpkins was completed during the week ending January 20th by Mr. Brown and he has started preparing these data for publication. Dr. Powers and his crew began pollinating pumpkins and squash in the greenhouse and finished transplanting about 2,000 snap-dragons for studies on inheritance of flower color. Mr. Bohn was sterilizing soil for tests of pathogenicity of organisms isolated from squash plants. He was also conducting a series of tests on the autoclave recently delivered for use in the pathology laboratory that is being outfitted. Mr. Hastings is continuing his work preparatory to making shipments of stock to fruit cooperators next spring and Mr. Kelso continued repair and overhauling work on various pieces of automotive and farm equipment.

"Dr. Babb and his assistant, Mr. Dewey, was taking data on the pea experiment designed to test the effects of certain types of irrigation on the ability of peas to fill. For this purpose two varieties of peas were being employed, one of which, Little Marvel, has been found to have better filling ability than the other, No. 58. These two varieties are divided into sub-series, one of which is kept well watered at all times, whereas the second sub-series is allowed to reach the silting point between irrigations. Counts are made at 2-day intervals of the peas in the pods to determine whether they are filling normally or are being absorbed. The types of irrigation were designed to simulate conditions in the Big Horn basin where wilting is a serious problem of the pea industry."

Dr. Hildreth spend several days in Denver conferring with Forest Service officials regarding work and funds for CCC Camp NA-2. While there he also took records on the experiments with carnations and roses in various greenhouses in Denver.

## SUBTROPICAL FRUIT INVESTIGATIONS

R. B. Piper, Orlando, Fla.

"For the investigation of pineapple diseases, 1500 Abacca pineapple slips were planted last August at the U. S. Subtropical Fruit Research Station, Orlando, Fla. The field was divided into 60 plots, including checks and treatments. The object was to test the value of certain fungicides and disinfectants for control of those diseases that may gain entrance through the base of slips; and to determine which of these compounds, if any, are toxic to the pineapple plant.

"The following fungicides and disinfectants were tested: Copper sulphate with lime, 1-1-50 to 4-4-50; basic copper sulphate 2 lbs. to 50 gals.; red oxide of copper 1/2-oz. to 1 gal.; copper oxychloride, 2 lbs. to 50 gals.; copper carbonate 2 ols. to 50 gals.; sulphur; borax, 5 percent; formaline, 3/10 percent; potassium permanganate, 1 percent; and mercuric chloride, 1-1000. These compounds were used in both solution and paste form. In the case of some of the treatments the slips were dipped in the solution; in others only the base and stem were treated. The paste was applied only on the base.

"For disease control, it is too early to expect any results from the treated plants. However, some treatments have caused injury to the plants, in varying degrees. Plants that were treated with copper sulphate and lime in the form of bordeaux mixture and bordeaux paste show no injury. Those treated with copper sulphate where no lime was added show some injury. Treatments with solutions made from basic copper sulphate, red oxide of copper and oxychloride, which were made without lime, caused no apparent injury. When paste was made of these three compounds, without lime, the plants show some injury.

"Plants that were dipped in copper carbonate solution showed slight injury, but severe injury occurred when this compound was used in the form of paste. There was no injury to plants dipped in ammonical copper carbonate. Plants treated with sulphur dust and sulphur paste show some injury, but none with lime sulphur paste."

## MISS GUERNSEY WINS PHOTOGRAPHIC HONORS

The Division's capable but self-effacing photographer, Miss Lillian A. Guernsey, who usually is quite successful in keeping her light hidden under a bushel, accidentally left it under a milk bottle at lunch time recently and your editor learned that she has just won first prize of \$10.00 in Section I, Class B of the Garden Photography Contest conducted by the Pittsburgh Garden Center. Six other prints by her are included in the display. Just to prove that some prophets are not without honor in their own country, she is getting first prize in the "still life" class in the Department's own photographic exhibit.

### COMPENSATION FOR INJURED WORKERS

The issuance of B.P.I. Memo. 1053, which provided that where a field employee performs travel with his expenses paid by a non-Government agency, a letter of authorization must be obtained through the Bureau in the customary way, in order that employees will be protected in case of injury while performing official travel paid for by a cooperating agency, brought forth several inquiries as to whether the benefits of the U. S. Employees' Compensation Commission extended to Collaborators without compensation.

In this respect, the Compensation Commission states, in part, as follows:

"\* \* \* in view of the many unusual relationships which the United States enters into from time to time for cooperative undertakings which have no counterpart in civil employment, the Commission has required, in order to establish civil employment by the United States, a showing that the individual claiming compensation received his pay either wholly or in part from moneys of the United States. This showing is required in addition to evidence of relationship of employer and employee existing between the United States and the person claiming compensation. Evidence of appointment, department rules and regulations governing the cooperative undertaking, nature of the work performed, etc., may be considered as indicia, but not as controlling in the determination of the status of any individual."

The Commission is reluctant, however, to generalize in respect to the status of employees or classes of employees, and in this connection cites an opinion of the Attorney General of the United States of March 21, 1918, which questions the propriety of any expression by the Commission as to the rights of any persons or classes of persons in advance of the presentation of a specific claim. In this opinion the Attorney General stated:

"Such an expression would certainly be informal in character, could give rise to no substantive rights in any individual, and could have no binding future force upon the commission or its members. In view of the diversities which constantly appear among cases upon which first impression seem of the same general character, the unwisdom of dealing with them in the mass would seem to be apparent."

This would seem to indicate that while Collaborators without compensation are not definitely entitled to the benefits accruing from the Compensation Commission, should they be injured in the performance of official duties for the Department, nevertheless each case submitted to the Commission will be decided on its own merits. It is therefore suggested that any such injuries be reported to the Business Office immediately, in order that they may be officially submitted to the Commission for consideration.



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ADMINISTRATIVE NOTES

Telegrams Bureau of Plant Industry Memorandum No. 1083 of January 25, 1940, summarizes suggestions from the Office of the Secretary in connection with the use of telegrams. The following precautions are essential, it states, if worthwhile economies are to be effected:

"1. Brief all telegrams as much as possible, eliminating all unnecessary words.

"2. Use air mail instead of telegraph whenever possible. Urgent air mail might be sent "Special Delivery."

"3. Use to a larger degree the free service of the Army and Navy radio nets, not only to points reached directly by these services but to points where the long haul is handled free. At these points the messages may be turned over to commercial companies for short haul and delivery.

"4. Make greater use of day letters, timed wire service, and night letters.

"Particular consideration should be given to the probable time of delivery of a telegram. Quite often a telegram marked 'Rush' is sent in the afternoon when in all likelihood it will not be delivered until the following morning, as the offices will be closed before it is received. In such cases a night letter will accomplish the same purpose and be cheaper.

"Careful scrutiny should also be given all telegrams with a view to assurance that the intent of the telegram is entirely clear, but that it is as brief as is consistent with clarity."

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Jackson "In the document entitled 'A Statement by Secretary  
Thanksgiving Wallace', sent out to Department workers with a covering  
Proclamation letter signed by Leon O. Wolcott, Assistant to the Secretary and dated December 15, there appears on page 7 a Thanksgiving Day Proclamation purported to have been issued by Andrew Jackson, President of the United States, in 1835," says a memorandum from the Office of Information, dated January 16, 1940. "A recheck of sources from which the language of the purported proclamation was originally obtained reveals that the proclamation is not authentic. It has been deleted from the article by the Secretary, comprising part of the document sent out December 15, which will shortly be published in the Survey Graphic Magazine. Please advise all employees who received the original document that the Jackson Thanksgiving Day Proclamation is not authentic and should not be quoted as authentic in anything issued by the Department of Agriculture."

Vol. 12 No. 4

February 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
March 1, 1940.

No.5

"Scrub cows"--- and cull apples Some years ago a report of the Wisconsin Dairy Herd Improvement Association contained a humorous account of the "scrub cow" and her effect on the dairyman's income. The writer admitted that it required the profits from three of his best cows to keep this scrub cow in comfort, and conceded that she was an expensive luxury, but added whimsically that dairymen were entitled to luxuries as well as other people!

Scrub cows are not limited to the dairy industry; fruit and vegetable growers frequently meet up with their plant counterparts. Consequently the News Letter is pleased to learn that Dr. J. R. Magness began the new year with a vigorous campaign against the scrub cows of the Eastern apple orchards--trees that are a liability rather than an asset. He gave apple growers attending the meetings of the New York Horticultural Society at Rochester and Kingston a cud to chew on when he announced it as his considered opinion that "If the cull orchards could be eliminated it would do more than anything else better to align production and market outlets."

He was seeking to impress upon them the fact that their problem goes a good bit deeper than cull apples: They must face the problem of eliminating cull trees as well; parts of orchards, or even entire orchards. There are in New York and New England, he pointed out, many apple trees that produce inferior fruit and produce irregularly. They add to production in the big crop years without contributing anything of value to production in the low crop years. Like the scrub cow of the dairyman they require the income from two or three efficient producers to keep them in comfort!

A good many commercial orchardists who depend upon apple production for a living are supporting "scrub cow" apple trees in their orchards. These growers are the persons who should logically take the lead in a campaign to eliminate the scrub apple tree--a campaign in which they could depend upon the whole hearted support of Federal and State apple research specialists and organizations.

"With the increasing competition of other fruits in the diet of the American people, the proportion of apples used to total fruits consumed has decreased markedly in the past 20 years," said Dr. Magness. "The Fruit Outlook for 1939 presented summarized figures which showed that the apple production per capita in the United States has decreased from 71.6 pounds for the period 1919-23 to 56.8 pounds for the period 1934-38. During the same period, however, the total of all fruits per capita produced in the United States increased from 176.6 pounds to 206.2 pounds."

The average apple production of the United States from 1927 to 1936 was more than 150 million bushels. For 1937, 1938 and 1939 the crop was even larger, due to favorable production conditions. A study of the prices received by the grower indicate that crops of about 130 million bushels are the maximum that can be marketed with general profit to the producer. In other words, when the volume of total apple production has appreciably exceeded one bushel per capita price returns have usually been unsatisfactory.

"It would seem that this would be about the ultimate relationship between apples and competing fruits," Dr. Magness suggested. "It seems questionable if citrus fruits can be distributed over the United States to sell for less than the price at which they have moved during recent years. Similarly, other competing fruits such as pears, dried fruits, canned peaches and pineapples, and bananas have been in abundant supply and have been marketed at as low prices as appears possible if the producer is to stay in business. Under these conditions approximately one bushel of apples per capita has been marketed with fair profit to the producer."

While the apple industry as a whole is basically in perhaps the soundest commercial position of any of the larger tree fruit crops of the county, the fact remains that the average apple production during the 10-year period of 1927-36, for example, indicates that on the average production is running nearly 15 percent higher than the quantity it has been found possible to market to advantage. Thus the apple industry faces the need for a real house cleaning. The elimination of the poorer parts of the present producing acreage appears essential to a reasonable adjustment of production costs and market needs. The "scrub cow" trees must go!

## DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, Amherst, Mass.

"Several days were spent at East Wareham this week making observations on the oxygen content of winter flooding water under ice and light intensity under ice on cranberry bogs," he writes from the Cranberry Disease Laboratory on February 2d, for the week ending January 27.

"Continuous cold since the middle of December has kept the bogs frozen over since that time with the thickness of ice increasing as time progressed. The ice last week was 7-8 inches thick in most places. This meant that on some bogs which were shallowly flooded the ice extended quite or nearly to the ground surface. Such a long-continued period of cold is unusual in Massachusetts so that this was a good opportunity to study oxygen conditions in winter flooding water under ice.

"Samples were taken only from bogs on which oxygen deprivation injury during winter flooding had been known to occur previously. Some of these bogs were seriously injured during the winter flooding period of 1938-39 as shown by leaf drop in the spring of 1939 and by the reduction in yield for that year. The oxygen content of the flooding water of all bogs from which samples were taken was very low. In some cases there was no oxygen left in the water, in others only a trace, and in the samples containing the greatest amount of oxygen less than 1 ml. of oxygen per liter of water. Because of the very low oxygen content of the flooding water on some of the bogs it is to be expected that leaf drop and more or less reduction in crop will be observed on these bogs again next season and on other bogs also on which the flooding water was of very low oxygen content for a considerable part of the winter.

"Light intensities under the ice were very low, less than 10 percent of noonday light for the date on which the measurements were made, or less than 5 percent of noonday light on June 22 with a clear sky. The ice on all bogs observed had snow frozen into the ice which greatly reduces its transmittancy for light and in addition there was on most bogs from half an inch to an inch or more of snow. No diurnal fluctuations in oxygen content were observed.

"There has been a great shortage in rainfall during the autumn and winter so that many bogs could not be flooded. I have never seen so many bogs in Massachusetts not flooded as there are this year. It is improbable that the vines have been injured by the cold so far so that the bogs that are out of water may fare better than those, or at least some of those, that are flooded....Many growers were taking advantage of the ice to do sanding on it. Aside from the fact that it has been quite cold the weather has been good. There has been almost no snow during the winter to interfere with sanding operations or other work."

## DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"There was precipitation on six separate days, amounting to in all nearly 2 inches, which has thoroughly soaked the ground for the first time in many weeks," he writes from the Cranberry and Blueberry Disease Laboratory on February 15th. "Practically all cranberry bogs have now been flooded. The frost was all out of the ground by the 7th, and there was practically no run-off.

"There was a snowfall of 5-1/2 inches on the 14th, although very little of it actually fell. The accompanying high gale piled it into hard drifts that closed for a time nearly every highway in New Jersey. Every snow plow in Burlington County was stalled by the morning of the 15th and crews of men were put to work cutting out the snow in blocks."

Elmer Snyder, Fresno, Calif.

"Grape Breeding.--Grape seeds resulting from the 1939 breeding work were stratified in flats on November 2d. After two months of stratification at a mean temperature of 50.3° F. the flats were transferred to the greenhouse where night temperatures of about 60° F. and day temperatures average 80° or above. Germination of the seeds has been very satisfactory this season. During the four week period in January, the greenhouse mean temperature was 70.3°. The seed germination percentages were as follows: After 18 days, 3 percent germination; after 23 days, 44 percent; and after 28 days, 57 percent. A few seeds continue to germinate each day but the majority of seeds under our method of handling appears to germinate between the 18 to 30 day period after being transferred to the greenhouse. Some preliminary tests on pre-chilling previous to stratification appeared to give beneficial results. With seeds of the same variety, pre-chilling without stratification was not satisfactory. It seems that cold plus moisture over an extended period of stratification produces the best germination when the seeds are then transferred to greenhouse temperatures.

"Grape Pruning.--The pruning of vines and the obtaining of brush weight records was practically completed early in February. A few rows have been left unpruned for the later treatments. Pruning operations were delayed during the early part of January due to rather unusual rainfall. Rain was recorded every day except January 15th during the period from January 1 to 12. Our rainfall to present totals 9.84 inches at the vineyard station, 7.46 inches of this total being recorded between January 1 and February 7. In connection with one plot of pruning weights, the ratio of fruit weight to brush weight per vine averaged slightly better than 6 to 1. Fruit weights averaged 50.8 pounds per vine compared to 7.9 pounds of brush removed at pruning time."

## DECIDUOUS FRUIT INVESTIGATIONS

Lee M. Hutchins, Brownwood, Tex. (Fruit tree virus diseases)

"The principal outside activity at the laboratory during the past week has been in connection with finishing our new Celloglass greenhouse," he writes from the U. S. Pecan Station on February 5th. "It is a very presentable looking structure and quite professional in arrangement and workmanship, and we believe it is at least a 'noble experiment.'"

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffmann (Vegetable Crop Investigations)

"Believe it or not, we had winter this week," he writes for the week ending January 27th. "The week started with moderately cold temperatures and snow. About 3 inches of snow fell Monday night, and 1-1/2 to 2 inches fell Tuesday. Because of considerable wind we did not get an accurate measurement of the total depth of the snow. The Meridian Weather Bureau reported 5.9 inches. Before the end of the week, temperatures fell very nearly to the record low for this section. Saturday morning, the station minimum thermometer registered zero. The Meridian Weather Bureau reported 2° above at the city office and 7° below at the local airport, in a low area southwest of town...."

"A complete inventory of seedstock available with observation notes was made on our sweetpotato seedlings. It was interesting to observe how differently some of these 139 seedlings had responded, with respect to storage sprout development, to uniform storage conditions--some showing little to no sign of sprouting while others had sprouts as much as 3 to 6 inches long."

J. M. Lutz (Handling, Transportation and Storage Investigations)

Writing February 3d he said: "Reports keep coming in of extensive damage to vegetables in Mississippi and surrounding States. Cabbage in the fields in the Crystal Springs area was severely damaged but will undoubtedly be replanted. The general effect of the freeze will be to delay the start of the shipping season with spring vegetables and strawberries. Strawberries are now blossoming in Louisiana and shipping is not expected to start until the latter part of March or early in April. They have started as early as January in Louisiana."

"It is still too early to tell what the damage to sweetpotatoes is. Results of damage to this crop will become more apparent as time marches on. It is known that temperatures in many houses--especially in lightly constructed or poorly heated ones--and banks were below the 'danger line' for several days."

## SUBTROPICAL FRUIT INVESTIGATIONS

Roy, W. Nixon, Indo, Calif. (Date growing).

"The commercial method of fruit thinning Deglet Noor and most other date varieties involves a combination of reducing the number of fruits per strand by cutting back the tips of all strands at time of pollination, and either then, or in most cases a few weeks later, cutting out a certain proportion of entire strands from the center of the bunch. This method has been compared with all other practicable methods of bunch thinning (reducing the number of fruits per bunch) and with some that are not practicable in studies begun at the U. S. Date Garden, Indio, Calif. in 1934. Although material for experimental work has been rather limited in most years, with seasonal replications showing comparable results we now have fairly consistent data that afford a background for the understanding of different methods of fruit thinning not heretofore available.

"It has been necessary to consider several factors in comparing different methods of bunch thinning. A large bunch normally carries and matures more fruits than a small bunch; and when both are thinned to the same number of fruits the former will produce fruit somewhat larger than the latter. Furthermore, the larger and thicker strands usually carry and mature more fruits than the smaller and thinner strands; and when both are thinned to the same number of dates per strand, the larger strands will produce fruit somewhat larger than the smaller strands. With the strand as a unit there has been a 5 to 10 percent increase in fresh weight per fruit following a reduction of about 50 percent of the fruit per strand as compared with unthinned strands on the same bunch, but there has been little or no increase from thinning beyond this point. With the bunch as a unit there has been a 20 to 40 percent increase in fresh weight per fruit following a reduction of about 50 percent of the fruit per bunch as compared with unthinned bunches on the same palm, with some further increase in size with still heavier thinning.

"The data show that any method of reducing the number of fruits per branch will increase the size of the fruits retained and indicate that there is some cross-transfer of food in the fruit stalk above the strands which limits size differences between different strands on the same bunch. As between different methods of bunch thinning, compared on different bunches on the same palms (in order to avoid any variability in leaf-bunch ratio), the fresh weight per fruit has been 5 to 10 percent greater from reducing the number of fruits per strand than from comparable thinning by reducing the number of strands per bunch. With most varieties of dates and with all large bunches, the removal of a few entire strands from the center of the bunch is necessary to facilitate picking and highly desirable to permit better aeration in the middle of



## SUBTROPICAL FRUIT INVESTIGATIONS

Roy W. Nixon, continued.

the cluster, where blacknose is most serious and scouring likely to occur in humid weather. Practically, therefore, the problem is whether to depend entirely or mainly upon strand removal or whether to reduce the number of fruits per strand. The results indicate that this will depend upon the variety.

"With Deglet Noor, a semidry variety, although the percentage of blacknose is increased by thinning and has been slightly higher from cutting back tips of strands than from removing entire strands, the larger percentage of first grade fruit has generally been obtained from the commercial method of bunch thinning described above.

"With Halawy, a soft variety, there has been a tendency for more shrivel when the fruit was thinned by cutting back tips of strands than by removing entire strands. With Halawy, therefore, it appears desirable to confine bunch thinning largely to the removal of entire strands.

"Other soft varieties, such as Barhee, are less subject to such shrivel and the greatest yield of first grade fruit should result from a thinning method intermediate between that for Deglet Noor and that for Halawy."

## NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"While the winter has been unusually mild, the filberts are giving a peculiar reaction," he writes February 3d. "They are not one bit ahead of last year. The only significant change that has been noted is that there will be relatively no late pollination for the Barcelona. The late pollenizer, the DuChilly, is shedding pollen about the same time as the mid-season pollenizer, the Daviana. Some of the extremely late varieties, like the Hall's Giant, would be of value this year in the few orchards where they have been put in."

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"Samples of fruit from trees selected during the 1939 season continued through the equalizer although it is taking much longer to bring them to constant weight than last season," he reports February 3d.

"The cause is that the moisture content is much greater at the present time than last year. It is rather difficult to understand for they were stored under quite similar conditions in both seasons. They are losing from 1.5 percent to as high as 11 percent moisture this season while being brought to constant weight, whereas last season it was from .5 to 5 percent. Inspection of the buds seems to reveal but slight to any damage from the cold weather."

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"We continue to get our weather on the 'California' pattern," he writes February 10th. "In Bogalusa 8.38 inches of rain fell during relatively short periods on Monday and Friday of the week ending February 10th. The downpour was so heavy as to be 'most unusual' even here. Precipitation at our Pine Grove and Mississippi stations was slightly less. There was some erosion on the new fields at the Cooperative Tung Farm but in practically every instance the terraces held and the damage is comparatively slight. Field work was greatly hampered...."

"Statistical work on the yields in the Pine Grove fertilizer experiment was carried out during the week. In this test three levels each of nitrogen, phosphorus and potassium are used, the lowest level for each element being that which is contained in an application of 300 pounds per acre of 4-4-3 fertilizer. The medium level is equivalent to the same quantity of 8-8-6, and the high to 300 pounds per acre of 12-12-9. Since all combinations of the different levels are included, there are 27 different treatments arranged in four replications, making a total of 108 plots. To make it possible to divide the experiment into smaller blocks and thus increase the control of error due to soil variation, the experiment is partially confounded. It was found that for this season the only factor that produced variations in yield of any significance was that of soil differences in the different blocks. This was to be anticipated because flower buds for this year's crop were formed in 1938, prior to the beginning of the experiment and the yield was largely determined by the number of flower buds on the tree and the proportion of these that survived the freeze of February 22, 1939."

He had written February 3d: "An examination of buds collected from bearing trees on January 29, after having been exposed to a minimum temperature of 8° F., indicates considerable injury. Forty-six terminals were examined, each with a very large number of male and female flower buds. In 2, or a little more than 4 percent, no living female flowers were found; in 15 more some of the flowers, male or female, were injured; but 29 terminals or approximately 60 percent of the total, showed no flowers damaged. While this sample, is rather small it is believed that on this evidence one may predict a very slight reduction of the 1940 crop due to extremely low temperatures culminating in the minimum of 8° F. on January 27th."

"Esperimental freezing was continued, whole nursery trees in tubs of soil being subjected to temperatures of 10°, 5° and -4° F. respectively. The lot subjected to each temperature consistst of 8 trees, each of which received a different fertilizer treatment in late summer in an effort to determine whether or not resistance to low temperatures may be modified by this means."

## NUT INVESTIGATIONS

C. L. Smith, Brownwood, Tex.

Writing from the U. S. Pecan Field Station on February 15th, he says: "As far as we can determine, no damage to pecan trees on the station was done by the low temperatures in January. The barley cover crop was slightly injured by the cold, but is now making good growth."

He had written February 7th: "The weather has been warmer and we have had some rain. The barley crop was not appreciably injured by the recent -6°F. temperature, and I have not found any injury to pecan trees as yet. Privet hedge plants and some other evergreens were injured to a slight degree."

## TORNADO STRIKES ALBANY

"Early on the morning of February 10, the city of Albany, Ga. was partially destroyed by a tornado that passed through the southeast portion," writes Max B. Hardy, February 12th, in a report from the U. S. Pecan Field Station and Laboratory.

"The path of destruction included the main business part of the city and many blocks of residences, mostly negro. Fortunately, the laboratory building, located at the northwest edge of the city, about a mile from the storm path, was not affected except that we were without any utilities for several hours. Estimates of the property damage have been placed as high as nine million dollars. Seventeen persons, 1 white and 16 negroes lost their lives; and some 300 were more or less seriously injured. Rehabilitation work has progressed rapidly and much of the debris has been removed from the streets. Food, money, and clothing have been pouring in from many sources and all the homeless have been housed in some sort of shelter and are being fed by the Red Cross.

"The force and direction of the tornado is well illustrated by the fact that large pieces of tin have been picked up in our experimental orchard at Philema, which is about 15 miles from Albany. Rains, thunder, and lightning accompanied the storm but, fortunately, there was not a single fire following the destruction. At Philema we recorded more than 2 inches of rainfall and there is evidence that the rainfall was much heavier at other places. Temperatures have been high enough so that there has been little suffering from cold. Part of the staff did what they could to help with rehabilitation work on Saturday and Sunday."

A copy of the ALBANY HERALD, mailed us immediately by Mr. J.R. Cole, emphasizes another fortunate angle, in that the storm struck early in the morning, shortly after 4 a.m., when but few persons were on the street. The accompanying rain, of course, served to minimize the fire menace, as Mr. Hardy states.

## ADMINISTRATIVE NOTES

Surplus Property When an employee has on hand surplus or unserviceable Government property to be disposed of he should report it to the Business Office on form AD-109 (in quadruplicate), listing separately (a) Articles that are worn out or damaged beyond repair; and (b) Articles serviceable still but not needed. A complete description of the articles should be given--type, manufacturer, trade name, serial number if any, condition, estimated value, etc. The form AD-109 should be accompanied by a request that a Board of Survey be appointed to dispose of the property listed.

At stations where there are surplus vegetable, root, fruit or nut crops, Boards of Survey should be requested for designated periods, usually covering the fiscal year, for disposition of such crops either by transfer to some other Government activity or by sale. In the latter case, the provisions of par. 4422 of the Department Regulations must be observed.

It should be borne in mind that a full report should be made as of June 30 of each fiscal year indicating the quantities and kinds of products involved, the method of disposition, the proceeds derived from the sales, and the value of any products transferred to other Government activities. This report should be forwarded to the Business Office without delay at the termination of the fiscal year.

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Cylinders or Other gas Containers Prior to placing open market orders for gases furnished in cylinders or other containers, a written quotation in triplicate should be obtained from the vendor containing the following information: (a) The number of days such cylinder, or container, will be loaned free of charge; (b) Whether rental or demurrage will be charged and, if so, the amount per calendar day; and (c) The amount to be paid for such cylinder, or container, if same is retained 365 days or more, with the understanding that all rental charges previously paid on the particular cylinder, or container, will be applied as part of the indicated purchase price of same.

If the purchase is to be made through Washington the written quotation will be obtained by our Business Office. If the purchase is made in the field, the quotation should accompany the voucher as submitted for payment. Thereafter any vouchers covering rental or demurrage should cite the date of purchase and serial number of the cylinder or container, and inclusive rental dates charged for the particular period.

This procedure will apply only to open market purchases as provision has been made for such rental and ultimate purchase by the Procurement Division in negotiating its contracts.

## ADMINISTRATIVE NOTES

Dynamite "It has been noted that a number of purchases have recently been made on Letters of Authorization, of a number of items such as batteries, spark plugs, dynamite, etc., for which contracts covering field procurement have been made by the Procurement Division of the Treasury Department," says Bureau of Plant Industry Memo. No. 1086, dated February 13, 1940. "In a number of instances, the contractors have provided outlets from which the items under contract may be obtained at many points throughout the United States. A number of those making procurements of the items in the open market have stated that they were unaware of the fact that contracts covered field procurements. To avoid suspensions by the General Accounting Office, the attention of all field employees should be promptly called to such contracts at the time the contract schedules are issued." (See page 279, News Letter, Dec. 15, 1939.)

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Corrections on Vouchers In Memorandum No. 182 from the Office of Budget and Finance, Mr. Jump calls attention to a letter dated December 9, 1939, from the Office of Accounts of the U. S. Treasury Department, which stresses the necessity of initialing material changes and corrections made on vouchers submitted to the Treasury for examination and approval prior to payment. Effective January 2, 1940, the Treasury Accounts Office will reject all vouchers on which changes or corrections, which affect the amount claimed, have been made unless such changes or corrections are initialed by the payee. Corrections or changes in jurats must be initialed by the person administering the oth. In case a 1034 voucher is supported by the dealer's certified invoice on which a correction is made which has already been initialed by the payee, the corresponding corrections on the 1034 voucher should be initialed by the official of the Department who signs the voucher.

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Oath of Office Attention is again called to the fact that the Oath of Office form must be completed before a Notary Public or other officer authorized by law to administer oaths and having an official impression seal. In a number of instances recently employees have had this form administered by a postmaster or Assistant Postmaster, which has necessitated our requesting them to complete another form.

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Address It is extremely important that the Business Office be notified (in advance if possible) of any change of mailing address or headquarters occurring in the field. There have been several recent changes in room numbers and post office boxes with no official notice being sent to the Business Office. For mailing and telegraph purposes as well as for all official records, it is urged that immediate notice be given of any change in mailing or telegraph address, and the effective date of same.

Vol. 12 No. 5

March 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y   N E W S   L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Vol. XII      U. S. Horticultural Station, Beltsville, Md.      No. 6  
March 15, 1940.

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Tangelos "It is now about 8 years since the Department introduced a new series of tangelos, hybrids between the tangerine and grapefruit," writes T. Ralph Robinson from the U. S. Subtropical Fruit Field Station at Orlando, Fla.

"The introduced varieties were selected out of hundreds of hybrid seedlings for their commercial adaptability because of attractive appearance, surpassing quality, and disease resistance. During this period citrus prices have as a rule been on the decline, offering little inducement for growers to plant new acreage to citrus, especially of varieties commercially untested. However, a few Florida growers have been sufficiently impressed with the merits of these hybrid fruits, particularly the Orlando, Minneola and Seminole varieties, to make small acreage plantings. These plantings are now coming into production, affording a chance to test the market reaction.

"In the case of the earliest maturing variety, the Orlando, which may be marketed from October through December, auction returns and private sales have exceeded all expectations, topping the market in competition with the best known brands of standard oranges and grapefruit. This has led to numerous inquiries as to availability of planting stock. The scarcity of nursery stock will prevent any unwise boom in tangelo planting, but there may be considerable topworking of unprofitable grapefruit and orange trees in the near future to one or more of the new tangelo varieties.

"The Minneola variety succeeds the Orlando in time of maturity, ripening in December and January; the Seminole following in February and holding into April or May.

## SUBTROPICAL FRUIT INVESTIGATIONS

## Tangelos (continued)

"The brilliant color of these fruits, exhibited in the rind, pulp and juice, make them especially well adapted to the fancy fruit trade and most of the future tangelo growers plan a sales campaign direct to the consumer, or to the high class retail trade.

"As citrus fruits are being consumed more and more in juice form, the deep orange color of tangelo juice adds greatly to its appeal, contrasting sharply with the pale colored juice of common oranges and grapefruit.

"One apparent objection to these new fruits when first introduced was their seediness, there being usually from 10 to 20 seeds to the fruit. Then the few bearing trees were in all cases located in mixed plantings, close to seedy varieties of oranges and grapefruit. Now that solid plantings of an acre or more of these tangelos have come into production, it is happily found that the seed content is greatly reduced, most fruits having not more than 5 or 6 seeds each, with some fruits entirely seedless. While this result could not be predicted with certainty, it was not entirely unexpected. Similar reduction in seed content had been noted previously in solid plantings of the Thornton tangelo, one of the early introduced varieties that still has many friends despite its lack of brilliant color and its rather poor shipping quality.

"While these hybrid fruits have pollen in abundance, they are apparently more or less sterile to their own pollen and set few seed when unmixed with seedy varieties of citrus. A similar result has often been noted with another group of citrus hybrids, the citranges--hybrids between the sweet orange and the Japanese trifoliate orange. Isolated citrange trees usually bear fruits nearly seedless, but when growing near seedy varieties of citrus, the seed content is greatly increased. Even the Washington Navel orange, which is normally seedless, is often found in Florida to produce seedy fruits when planted close to seedy varieties.

"The trend of the trade in citrus fruits has for some years past been steadily toward the seedless varieties, placing a marketing handicap on varieties known to be seedy. The few-seeded character of the new tangelos when grown in solid blocks thus becomes an important factor in their future utilization. It is also a warning to future tangelo growers not to interplant these tangelos with other varieties of citrus, especially those of seedy character."



## DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"Recent issues of the News Letter, with their reports on the low temperatures at some of our stations, gave us here in Wenatchee the shivers," he admits, writing from the Fruit Production and Disease Laboratory on February 21. "Since Wenatchee is situated the farthest north of any station in the Division our feelings can well be appreciated when we read about such temperatures as 5° and 6° below zero at Brownwood, Tex., and other temperatures almost as low in Georgia and Louisiana.

"Since the first of February our maximums have been running around 50°, with minimums around 24°F. One would almost conclude that our country had turned around. As a matter of fact, this is the third consecutive mild winter for the Pacific Northwest. As I remember, the coldest temperature reported for the winter was 9° above during early January. Very little frost has been in the ground for any length of time during the entire winter, and at the present time there is very little snow in the Wenatchee district. This condition has favored the orchardists in getting their pruning out of the way and preparing for dormant spray applications. On the other hand, our winter precipitation has been considerably below normal and there is some apprehension as to the amount of snow in the mountains to fill the irrigation requirements for the entire district. Members of our group who are ski enthusiasts are also bemoaning the lack of snow.

"Fertilizers have been applied in many orchards to date and I believe in general that the orchards will receive fertilizers earlier than any year since 1925.

"Dr. Lindner has just rounded out his modification of the cobalt nitrite method of determining potassium. We are highly pleased with his results and feel that we have a method that we can place much confidence in when determining small amounts in plant tissues.

"To date I have a record of at least 500 acres of apple trees that will be sprayed with tar distillate for the removal of blossoms during the coming year, and anticipate perhaps a few hundred more. In almost every case where this spray will be applied the grower has either been unable to get financial aid for the coming crop or did not wish to jeopardize his present holdings to buy spray material to control codling moth this year. The growers do not wish to lose their orchards, but would rather wait until market conditions are improved before producing a crop. In almost every case the acreage that will be sprayed represents marginal orchards. I am rather surprised that so many growers are willing to experiment with this material. It is also of interest to me to learn that Mr. Meiners, who used this spray on his entire orchard last year, will do so again this year."

## DECIDUOUS FRUIT INVESTIGATIONS

C. O. Hesse, Davis, Calif.

"The mild winter temperatures are resulting in a good deal of delayed foliation symptoms on apricots," he writes February 27th.

"At Brentwood, Blenheim trees were showing first bloom the latter part of the week, and it appeared that 50 to 75 percent of the blossoms on these trees would open. The others would either be considerably delayed, or would blast entirely. Tilton, on the other hand, showed only a very occasional bud that appeared to be swelling normally. It is yet a little too early to predict whether Tilton will fail entirely, or will only be delayed, but past observations indicate that most of the buds will probably fall.

"In the Winters district, where Tiltons are not grown there should be enough bloom on nearly all trees to result in a fair crop. However, such varieties as Royal and Stewart are showing definite delayed foliation symptoms, such as very uneven opening of the blossoms, and quite a few buds which appear to be dropping. It is a little early yet to say definitely that they will drop, but they show no swelling, and do not seem as tight as they should. The trees also show occasional small branches in full bloom, while the rest of the tree is several days behind."

He had written February 17th: "While the reports from the rest of the country deal largely with such topics as new temperature "lows", how deep the snow was, and winter injury observations, we are enjoying a near normal rainfall and very mild temperatures.

"The rainfall figures, including the last two storms, show a total for the season of 10.47, 0.53 inches below the average for this date. While we got off to a slow start last fall, since the new year our rainfall has closely paralleled the normal curve. In addition the storms have been so spaced that they have been very effective in replenishing the soil moisture supply, and only once has there been a serious rise in the river levels.

"Up to the end of January we had had only 500 hours of temperature below 45°F., compared to the average of approximately 800 hours. We have not gained appreciably on this deficit since then, and with the apricots now coming into bloom we are expecting rather serious inroads on fruit set due to delayed foliation. We are taking advantage of this condition to make observations on the commercial varieties, and are starting some breeding work with introduced material that is showing marked resistance to delayed foliation."

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"The winter injury situation has not changed much in the last week," he writes Dr. Cullinan from the U. S. Horticultural Field Laboratory on March 4th.

"No more browning of the cambium is showing up and bark splitting has reached a status quo. Further examination of trees in the Fort Valley section shows that some orchards are unhurt while others are severely injured. Most orchards have at least 10 or 20 percent of the trees injured in some degree. Why some orchards are unhurt is not evident now, but it does not appear to be connected with fertilizer practice, cultivation, previous cropping, spraying or pruning. Belle is the only variety that appears to be less injured than others. Later I plan to make a survey of the injury to determine any possible connection between susceptibility to winter injury and production practices.

"From various reports, it appears that the area of injury extends from Thomaston east to and north of Macon, and south to Montezuma. The important producing area 20 miles west of Thomaston, and all of north Georgia are reported uninjured. In northern Alabama, where the temperature dropped to 6 below zero, from 20 to 90 percent of the flower buds were killed, but I could find no trunk injury.

"I made the trip to Baileyton last week, arriving there in grand style behind a pair of mules. Freezes had knocked the bottom out of Alabama dirt roads. I went over Mr. Baker's planting of several thousand seedlings, and the notes he had made describing the 150 best fruits. The descriptions sounded very good, and I selected 15 early-ripening free-stones, a majority of Hiley origin, to bring back to Fort Valley for testing. One of these ripens 39 days ahead of Elberta. I believe the trip was quite worthwhile and I am planning to return there when the fruit is ripe this summer.

"Four days of warm weather last week have put a touch of spring in the air, and shrubs and trees are putting forth leaves. Australian Saucer trees are in full bloom..."

He had written February 26th: "The winter injury situation in central and south Georgia is becoming worse daily, as the injury becomes apparent. February 26th I examined several blocks of trees in Mr. Baird's orchards that ten days ago had only a small percentage of injured trees. Now practically every tree shows injury, and on about a fifth of them the bark has already split open on the south side. As the weather warms up, I believe more cracks will show, for air pockets have formed between the bark and the wood, in many cases all around the trunk."

## DECIDUOUS FRUIT INVESTIGATIONS.

Leslie Pierce, Vincennes, Ind.

"The sub-zero temperatures in January completely destroyed the peach crop in the Vincennes area," he writes February 27th. "I have not found so far any severe damage to peach trees, although it is possible that some will show up later. Reports that I have received from several reliable sources indicate that the peach crop was wiped out in Indiana, Illinois, Kentucky and Missouri.... Severe injury to peach trees by a temperature of  $-16^{\circ}\text{F}$ . is reported by Mr. Frank Street, Henderson, Ky. No reports of injury to apple trees or apple blossom buds have been received."

John C. Dunegan, Fayetteville, Ark.

"The growers are very much concerned over the moisture deficiency situation and claim that the subsoil has less moisture in it than for many years past," he writes February 17th. "As evidence of this moisture deficiency, Mr. Arthur Ruppel cites the fact that many of his neighbors have to haul water for their stock as springs and wells never before known to go dry are now dry. Unless we have ample supplies of water this spring he feels that it will be difficult to mature an apple crop in 1940. Fortunately it started to rain last night and is continuing today. If we can have an abundance of rain during the next month the situation will be greatly improved."

N. H. Loomis, Meridian, Miss.

"During the past week sucker plants of 13 blueberry selections were obtained at Terry, Miss.," he reports February 17th. "Due to continued cold rainy weather, very little progress was made with outside work... The grape seed from last year's breeding work, that has been stratified for a month, was moved into the greenhouse for forcing the week ending February 10th, and cuttings and plants of grape material were sent to several experiment station workers."

(P.S. An item omitted from the report for the week ending February 17th, concerns the arrival of a son in the N.H. Loomis family. The young man is reported as doing nicely.)

## ADMINISTRATIVE SPECIAL

Franked. The report on the weight and count of mail sent out under Mail frank for the quarter ending March 31, 1940, must be in the Office of the Chief of Bureau not later than April 10th. Please, therefore, mail your report to our Business Office promptly the last of March in order that there may be no delay in preparing the consolidated report for the Division.

## NUT INVESTIGATIONS

John H. Painter, Cairo, Ga. (Tung investigations)

"We feel that we may have found one of the reasons for poor germination in tung seeds," he writes March 2d. "We were at loss to explain why under controlled conditions, where everything was favorable for germination, 35 percent of a selection would germinate within 10 days and the balance still not germinate after nearly a month. An examination of quantities of seed has shown that in one case for example, more than 50 percent of the seeds either had no embryo at all or else had imperfect ones."

He had written February 20th: "Examination of buds in the Dwight Davis orchard at Tallahassee indicates that practically no damage has occurred in that orchard. Further investigation of the apparent damage at the Wight orchard shows the condition found to be closely associated with individual trees. Taking the whole orchard into consideration, it is believed that there are ample healthy buds to insure a crop, barring further cold spells."

Paul W. Miller, Corvallis, Oreg.

"The pollination period of the Barcelona variety of filberts is now practically over," he reports February 17th, "the catkins on all pollenizers except a very few late ones having shed their pollen. Last year a comparable stage of development was not reached until about March 1, indicating that the season is about 10 days earlier than last year."

## ALBANY SHOWING AMAZING RECOVERY

"The work of reconstructing Albany, Ga. following the tornado of early February has progressed amazingly," writes Max B. Hardy. "After all the destruction the work of our station was inconvenienced for only a few hours on the day of the storm. It is a pleasure to live and work in a city with people who have such a fine reaction to disaster!"

## ADMINISTRATIVE NOTE

Tires and tubes The existing contract for automobile tires and tubes (General Schedule of Supplies, Classes 8 and 83) expires on March 31, 1940. We are given to understand that the contracts for these items to be entered into effective April 1, 1940, will be at prices substantially in advance of those in the present schedules. It is therefore suggested that so far as possible your requirements of these items be met before March 31, 1940, not only in the interest of economy, but also to comply with previous instructions to make necessary purchases prior to the final quarter of the fiscal year.

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ADMINISTRATIVE NOTES

Beltsville Library We have been able to provide space for the beginnings of a station reference library at Beltsville, and are now in a position to take care of books and periodicals found suitable. A number of our staff members have already contributed sets or partial sets of technical magazines, periodicals and the like, and we shall be glad to consider other donations. There must be a considerable number of technical and other periodicals that could be filed to advantage in this new reference library, where they would be more generally available and useful than if kept in a private office or laboratory--and their removal would also release space needed for files or other office equipment. If you have any material that might be suitable for the library, please get in touch with Mr. Frank L. Goll (Telephone Br. 16) and he will attend to all details of its transfer.

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Surplus Property On January 5, 1940, a memorandum was sent to all concerned regarding the procedure to be followed in requesting items shown on the surplus property lists as issued by the State Procurement Officers of the Treasury Department.

It often is found that by the time the requests are received from the field and forwarded through the Division of Purchase, Sales and Traffic to the Procurement Division in Washington, the items desired are no longer available. While it is necessary in all such cases to follow the prescribed routine, it is suggested that when requests are sent in for equipment or materials appearing on the surplus property lists, a letter be sent to your State Procurement Officer asking that the particular items be " earmarked " for your use, and also requesting that he notify his Washington office that he has been asked to reserve the items for you. Your letter should, of course, make plain to the State Procurement Officer that you have sent to Washington your formal request for the property.

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Organic Chemicals The Procurement Division of the Treasury Department has negotiated a contract with the Will Corporation, Rochester, N. Y., effective February 1, 1940, to terminate January 31, 1941, covering all chemicals as shown in the Eastman Organic Chemical List No. 30. Since some of the chemicals included in this list are of foreign origin, it is recommended that you fill ALL of your requirements from the General Supply Schedule, Item 51-P-365-2, which covers the above list. By so doing, we are relieved of the necessity for furnishing a supporting statement to cover purchases of materials not of domestic production or manufacture. The Will Corporation has been furnished a list of all of our field stations and has agreed to mail to each a copy of List No. 30. If you do not receive your copy within the next two weeks, please notify our Business Office.

## ADMINISTRATIVE NOTES

Leave We wish to pass along to station superintendents and others in charge of workers the substance of a memorandum recently sent by the Chief of Bureau to the heads of Divisions.

Under present law, it points out, an employee can accumulate a total of 60 days' annual leave. "This amount can be carried forward on December 31st. With current leave becoming available on January 1st, an employee could have available a total of 86 days of annual leave. Furthermore, under present law, an employee has a legal right to use this leave. While the leave necessarily must be arranged with due regard for the work on which an employee is engaged, nevertheless, if requested, arrangements would have to be made so that the employee could utilize his leave at some time before he would lose it.

"An employee cannot arbitrarily determine when he will take the leave to which he is entitled, nor can his administrative superior advise him when he must take the leave. Obviously, continuing consideration must be given this problem by administrative officers; otherwise, serious disruption of work may ensue. It is suggested that all administrative officers supervising other workers give this matter careful supervision with a view to the utilization of leave by employees in such a way that the employee may receive a maximum benefit and interruption to Bureau work be at a minimum.

"Temporary employees who may be entitled to leave must be granted the leave to which they are entitled before the date on which their appointment terminates. When a reduction in staff is contemplated, advance consideration should be given to the question of leave employees may have available. Curtailment of funds frequently coincides with the fiscal year. Unless the leave situation is carefully considered in advance, complications at the end of the fiscal year may result.

"Heads of divisions are urged to give a continued consideration of the leave situation in their division, and a general review at least once a year, preferably early in the calendar year."

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Sick Leave In connection with Leave questions, attention is also invited to recent legislation, amending the Annual and Sick Leave Acts of March 14, 1936, which provides "That the days of annual leave with pay provided for in the Act...and the days of sick leave with pay provided for in the Act...shall mean days upon which employees would otherwise work and receive pay, and shall be exclusive of Sundays which do not occur within a regular tour of duty, holidays, and all nonwork days established by Federal statute or by Executive or administrative order. This, of course, means that sick leave in future will be charged like annual leave--to include only working days.

## ADMINISTRATIVE NOTES

Attendance at meetings In a general memorandum dated February 29, 1940, relative to attendance at meetings, Mr. Gould quotes the substance of a communication from Mr. Allanson in connection with a request for approval of attendance by certain employees at the Western Spray Conference, Walla Walla, Wash., February 13-14, 1940.

"Reference is made to your note of January 30, and the Form 61 you enclosed covering attendance by Messrs. Smith and Ryall at the Western Spray Conference, Walla Walla, Washington, February 13-14, 1940.

"I discussed this matter with Mr. Gladmon, and from the information available to us, this apparently is not a meeting, but rather a conference of research workers and growers with a view to planning future work. Accordingly, no Form 61 is required.

"In view of the use of the term 'meeting', it is suggested that care be exercised in the preparation of letters of authorization and reimbursement accounts. The word 'meeting' should be used only when the gathering is in fact a meeting in the sense of the Secretary's memorandum. Where the get-together is a conference of research workers, it is much better to use a wording which makes this clear. This applies both to the letter of authorization and the reimbursement account."

The note of January 30, concerning the attendance of members of our staff at the Western Spray Conference, explained the object and plan of this conference as a gathering of State and Federal Research and other workers for the purpose of reviewing the results from the past season's experimental spraying and spray residue removal investigations and the coordinating of plans for research work the coming season, as well as the working out, in the light of most recent results of research work, the most practicable spray schedule for the coming season.

The purpose of Mr. Allanson's memorandum is to make a recognizable distinction between an assembly of some formal organization with a set program, and an informal gathering of a more or less limited group with membership restricted perhaps by a mutuality of interests centering largely about a relatively narrow range of subject matter, and the objects of which are to review the past and plan for the future - in other words, to confer.

In requests for L.A.'s and in reimbursement vouchers the use of the word "meeting" should be avoided unless the get-together is in fact a meeting in the sense of the Secretary's memorandum.

While other questions will doubtless come up for discussion and settlement, this distinction helps somewhat to clarify the situation.



## CHEYENNE HORTICULTURAL FIELD STATION

"Dr. Babb has reported a very large demand for seed of the Danmark tomato, tested here for several years and reported on in Circular 533, 'Results of Tomato Variety Tests in the Great Plains Region,' by M. F. Babb and James E. Kraus, issued last November," writes Dr. A. C. Hildreth, Superintendent of the Cheyenne Horticultural Field Station, Cheyenne, Wyo. on February 10th. "This variety was secured from foreign sources originally and is not at present available in the trade in this country. We are taking steps now to get it into the trade so it will be available to growers in the plains regions. There have been many requests for seed of other varieties reported in Circular 533, but in most cases we have been able to furnish sources for these.

"There is also an occasional request for seed of the Early Cheyenne pumpkin developed here by Dr. Powers and introduced last spring. (Circular 537, Early Cheyenne Pie Pumpkin, by LeRoy Powers, issued in November, 1939.) It will be in the trade this year. One request for this pumpkin came from Miami, Fla.

"Preparation for spring orchard plantings were continuing during the week. Mr. Adams had a crew of about 20 CCC enrollees working with him in digging holes for new trees in the dry land orchard and Mr. Hastings continued the work on planting lists which has been previously reported.

## RESISTANT CANTALOUPE NO. 8

Development of a new cantaloupe resistant to both strains of the powdery mildew which has been damaging Imperial Valley melon crops has been announced jointly by the University of California College of Agriculture and the United States Department of Agriculture, says the Western Grower and Shipper for February, quoted in the Department's Daily Digest. Known as No. 8, this new cantaloupe was developed through a cooperative breeding project between these two agencies. It answers the need for a variety resistant to a new form of mildew which suddenly appeared in the Imperial Valley field two years ago.

Powdery mildew at one time threatened to destroy the cantaloupe industry in Imperial Valley. Cantaloupe No. 45 was developed by the University and the United States Department of Agriculture to meet this danger. Shortly after introduction of this variety, however, the new form of mildew to which No. 45 was not resistant, gained a foothold in the valley and caused heavy losses for the past two years. Under the direction of Dr. T. W. Whitaker of the U.S.D.A. and Dr. Glen N. Davis, instructor in truck crops at Davis, more than one hundred cantaloupe types are still being tested in the hope that an even better resistant variety than No. 8 may be obtained.

## ADMINISTRATIVE NOTES

North Dakota Gasoline tax In connection with a recent decision of the North Dakota Supreme Court and rulings by the State Auditor and Attorney General to the effect that dealers are required to pay the tax imposed by North Dakota laws with respect to gasoline sold to agencies of the United States for use in the State, a question has been raised as to whether contractors for the sale of gasoline to the Government are entitled to add the tax to invoices covering deliveries in North Dakota under existing contracts.

The Procurement Division of the Treasury Department does not believe that the decisions can have any effect upon prices stipulated in existing contracts and so for the present will continue the issuance of tax exemption certificates, and its certifying officers will not certify for payment any amounts in excess of the stipulated prices which may be claimed in contractors' invoices on account of this tax. Similar action by other agencies placing orders under such contracts is recommended.

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Coordination of surveys The Department's Office of Land Use Coordination calls attention to the coordination of surveys and suggests that these records might constitute something of a clearing house of information for the Department in the matter of surveys. Material may be seen in Room 359 Administration Building. For information call Extension 361. Information on the following types of surveys is being maintained:

Aerial surveys, soil surveys, conservation surveys, the nationwide forest survey, range surveys, land use surveys, crop yield, flood control, sedimentation studies, hydrologic studies, water facilities surveys, type of farming studies, farm labor surveys, farm tenancy surveys, land ownership surveys, land value studies, studies of local government and public finance, tax delinquency studies, sociological surveys (including surveys of dependency and relief and surveys of land occupancy and migration), highway planning surveys, land classification rural zoning, etc.

## SEMINAR TALKS

On February 20, Dr. O. C. Magistad, Director of the Regional Salinity Laboratory, Riverside, Calif., addressed a general seminar at Beltsville, discussing the work of the Salinity Laboratory. We hope to present a summary of his talk in the April 1 issue. Another seminar discussion that proved of decided interest was a talk March 4 on carnation breeding, by Dr. G. A. L. Mehlquist of the Division of Subtropical Horticulture, University of California at Los Angeles.

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BELTSVILLE NOTES

Dr. V. R. Boswell spent some time recently in South Carolina and Georgia, discussing with collaborators and staff members of his section certain phases of their sweetpotato investigations.

Dr. S. L. Emsweller was in New York State last month; and has just returned from a trip to North and South Carolina, where he inspected daffodil and Easter lily, and other work on bulbs.

Mr. E. D. Mallison of the section of handling, transportation, storage and market disease investigations has been away from Beltsville for several weeks conducting tests, chiefly from Florida, on three different types of refrigerator cars. One has the conventional end bunkers, while the other two have overhead refrigeration. One of the latter carries the water ice in bunkers located under the ceiling of the car and so arranged that the cooled air and drip water pass down a metal lined duct in the sidewalls. The other utilizes dry ice to cool a secondary refrigerant which is circulated through coils on the side walls just below the ceiling. The gas from the dry ice can be released in the car if desired so as to maintain a fairly constant concentration of  $\text{CO}_2$  in the loading space.

Mr. J. M. Lutz of our Horticultural Field Station at Meridian, Miss., is in southern Texas to arrange shipping tests with cold-injured grapefruit to determine the best methods of transporting it to market.

Dr. F. J. Stevenson and Mr. P. M. Lombard of the potato investigations section were in South Carolina during February to plant leafroll and spindle tuber tests, and the potato breeding plots.

Mr. Juan B. Demaree was also in that section recently, spending some time in North Carolina in connection with the planning of spring experimental work on small fruit diseases and a study of the distribution of blueberry canker.

Dr. Neil W. Stuart made a brief trip to New York State to confer with investigators on rootstock problems.

Dr. H. L. Crane was called to Morgantown, W. Va., on account of the death of his father, which occurred suddenly on March 4th.

Miss Fern Swendiman, secretary to Dr. J. R. Magness, has transferred to the Forest Service with headquarters at San Francisco, Calif.

Dr. George M. Darrow left last week for South Carolina, Georgia, Alabama, Florida and North Carolina, where he will spend some time conferring with Soil Conservation representatives in connection with blueberry work in the south. He also expects to collect and study Rabbiteye blueberries, and to visit a number of breeding experiments.

Vol. 12 No. 6

March 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII

U. S. Horticultural Station, Beltsville, Md.

No. 7

April 1, 1940.

Painting the lily To most of us the word lily merely brings a thought of Easter or perhaps of a solemn moment when we shall repose peacefully with a lily clasped in our hands--but let's talk about Easter.

The most familiar lily, then, is the so-called Easter lily, widely grown by florists who force it for sale as potted plants and as cut flowers. Easter lilies are rarely grown in outdoor gardens. Of late years we have been doing a good bit to familiarize flower growers with the many beautiful forms of garden lilies, but we have not been neglecting our bread-and-butter, the Easter lily.

This is brought to mind by the very timely appearance of a press item concerning our work in spreading the blooming period of the Easter lily. The boys in the Press Service never watch the clock, but what an eye they keep on the calendar! The article distributed to the papers was sent out March 24th--meaning that it couldn't have been released any closer to Easter Sunday. The burden of its song, however, is that Easter may be extended a good bit so far as the lily is concerned; in fact, what we are doing to produce bulbs free from disease, greatly improve the quality of the blooms, and lengthen the blossoming period of the Easter lily promises the establishment of a new bulb industry in this country.

"The possibility of establishing a new bulb industry in the United States appears assured as a result of Easter lily investigations now under way at the U. S. Horticultural Station, Beltsville, Md.," says the report. "This work has demonstrated that the American-grown bulbs are of better quality for forcing and by proper management can be made to bloom in the fall and winter, when the market is favorable.

"Every year florists near large cities in this country import about 3 million dollars worth of lily bulbs for forcing in greenhouses. Practically all of these have come from Japan. Farmers in southern Louisiana, Florida, and Oregon have carried on a 'back yard' lily bulb business for years, but until recently the belief among the trade was that domestic bulbs were inferior to those grown in Japan.

"In one of the greenhouses at Beltsville Easter lilies grown from domestic bulbs have been blooming since last October, and the number of fall and winter blooms is about double the number usually obtained from imported bulbs. Dealers sell plants on the basis of the number of blooms so this is an important point in favor of bulbs grown in the United States. Also, domestic bulbs can be kept free of disease, which makes the plants more vigorous.

"The early blooms produced from domestic bulbs are of special interest to florists, as blooms in the fall and early winter command a much higher price than those that come later in the spring. The early blooms are used in the cut flower trade, while some of the later ones are sold as potted plants for the Easter trade. In the past forcing bulbs for fall blooms has been a highly speculative business and many greenhouse men have given it up. To get blooms before March it was necessary to buy the imported bulbs and store them for nearly a year. This long storage weakened the bulbs and made the crop uncertain.

"A series of experiments was begun at Beltsville in 1935 to determine the best time for digging, proper storage methods, and cultural practices in general. At the same time breeding investigations were started.

"The work at Beltsville indicates that it will be practical commercially to grow bulbs in Louisiana, dig them early in July, store them for 5 weeks at 50 degrees F., and plant them in the greenhouse the middle of August. Blooms can be expected under this treatment for Thanksgiving. Later plantings will give later blooms so that it will be possible to make successive plantings in the greenhouse and have the blooms come along as desired. For the very early blooms the bulbs will have to be grown in the deep South, but for later ones the bulbs can be grown in the South Atlantic states as far north as North Carolina and also in Washington and Oregon.

"So far most of the lilies grown at Beltsville are the Creole variety, which has been grown in Louisiana for many years. This variety and others from Oregon, Bermuda and Japan have been crossed in all possible combinations and so far about 100 superior types have been selected for further observation. These are being increased as rapidly as possible, by removing scales from the bulbs and planting them in greenhouse flats. Within one month from 1 to 6 small bulblets are formed at the base of each scale. They are then potted and grown to maturity in the greenhouse."

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A WHITE ROOT ROT OF APPLE TREES, CAUSED BY CORTICIUM

An article describing a root rot disease of apple trees was published in the February, 1940, issue of *Phytopathology* by J. S. Cooley and Ross W. Davidson, "A White Root Rot of Apple Trees caused by Corticium galactinum."

This disease is characterized by a white web of mold covering the surface of affected roots. Both the larger and the smaller roots in the infection zone may be affected. The specialized structure bearing the fruiting bodies resembles the vegetative portion enough to be mistaken for it, but the denseness of the web and the color, which is white to buff, will usually distinguish the fruiting layer from the vegetative part. When affected roots are not killed too rapidly they may show bumps and depressions. In the later stages of affected roots they are very light and brittle.

The killing action of this disease even on large trees is very rapid. Often a tree will show in the above-ground parts no evidence of a diseased condition one spring and by the next spring it will be dead. Fortunately, the spread from tree to tree in orchards has not been observed to be rapid. No remedy is known of ridding a tree of the disease after it has become infected, nor do we know of measures that would prevent the infection of healthy trees.

Our observations up to the present time have indicated that this disease is associated with new cleared land, being found frequently on stumps of forest trees. If one is contemplating setting an orchard in a region where this disease occurs and has a choice of old or new land, he should consider the possibility of losses from this disease in choosing the new land for an orchard site.

This disease may cause losses of shrubby ornamental plantings when they are set in new land. It has been found attacking holly, dogwood, blackberry and Kerria. It is probable that it attacks a wide range of hosts when they are growing in soil containing diseased roots. At present, the disease is known to occur in Delaware, Virginia, Tennessee, and Indiana, but since the causative fungus is known to have a wide distribution as a saprophyte, it is probable that the disease is much more widely distributed than we now know.

Field men may contribute to our knowledge of the distribution and severity of this disease by sending to Dr. J. S. Cooley, U. S. Horticultural Station, Beltsville, Md. specimens of root rots resembling the White root rot, stating the host plant and the place and conditions under which it was growing.

## DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"The seasonal rainfall at the Oakville, Calif. grape plot amounted to 31.04 inches on March 1st," he writes March 15th. "The average annual rainfall for this location for the period 1915-1930 incl. was 31.25 inches. Since there are several months yet in which rains usually occur at Oakville, an above-normal rainfall is indicated. The Napa river was above flood stage during the latter part of February when over 10.50 inches of rain fell within a 3-day period. Some soil erosion occurred at the Oakville plot which is located on a slight slope. Level land throughout the Napa Valley was submerged from 3 to 4 feet. At Fresno the rainfall on March 1st amounted to 13.09 inches compared to an annual average of 8.61 inches for the period 1915-1930 inclusive. This above-normal rainfall at Fresno may save one application of surface irrigation.

"Slight frost injury occurred to vines at Fresno on the mornings of March 12th and 13th. Practically no varieties were out in green leaf but buds in the woolly stage were killed. As usual with these spring frosts, some buds were killed while adjacent buds on the same vine and in apparently the same stage of development showed no injury...Compared with the data of previous seasons, the vines at Fresno are starting growth about 5 days earlier than the average starting date."

Lee M. Hutchins, Brownwood, Tex. (Fruit tree virus diseases)

"The bloom season for peach trees of standard commercial varieties is close at hand in our experimental nurseries at Brownwood," he writes March 11th. "Hiley trees are showing an occasional open bloom. Luckens peach trees and also wild plums are in full bloom. Peach seedlings have grown well in our new Cello-glass greenhouse. They were first used in peach-mosaic vector-inoculation experiments on February 26th and are now 6 to 8 inches high. The facilities of the house have greatly aided early season work, permitting it to begin at least a month earlier than would be possible under field conditions. Several additional flats containing peach seeds have been prepared so that a new crop of seedlings will be ready for use when the present supply is exhausted."

John C. Dunegan, Fayetteville, Ark.

"The strawberry growers of northwest Arkansas are to have a meeting at Springdale on March 5 to discuss plans for the 1940 season, he wrote March 2d. "Speakers will include local growers as well as members of the University staff. The program will center about plans for resetting strawberry beds on a uniform basis. Varieties, fertilizers and cultural practices are the main topics to be discussed. It is estimated that 5,000 acres must be reset in Washington county to bring the acreage back to normal."



## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"Dr. McCann has recently summarized the results of examination of a large number of twigs and buds," he reports March 2d. "Out of 100 terminals collected on February 9 from the Rankin orchard, situated not far from our weather station at the Tung Farm, where the minimum temperature registered was 12°F., only about 3 percent are killed. In 100 terminals collected from Pine Grove, where a minimum of 9°F. was registered, 1 was completely killed 3 showed partial injury and 2 showed some injury to the pith. Another 100 terminals, from what we call the Upper Nursery, planted on the hill tops at the Tung Farm, showed no terminal buds killed and only 3 with injury to the pith. Last spring when we were struggling to clear a sufficient area in which to plant out our nursery, we decided to take a chance on a fairly open area with excellent soil lying in the bottoms next to a creek. Unfortunately we did not have a sufficient number of weather instruments available to enable us to establish a station at this lower level but without doubt it was from 2° to 4° colder than on the hill. Here 66 out of 100 terminal buds sampled were found to be entirely dead. In 12 terminals the pith showed some injury but the buds were still alive. In 22 no injury was noted.

"On the whole there appears to be comparatively little injury to the twigs and buds of tung trees throughout the whole tung area, from Louisiana to Northern Florida. Reports from points slightly to the north, such as Albany, Georgia, and Meridian, Miss., indicate considerable injury. Hence it would appear that these trees have escaped injury by a very narrow margin in temperature. It is possible that there is more injury, particularly to the young twigs, than is now evident. In certain orchards some of the new growth shows a sort of water soaked condition near the cambium that may prove to be more serious than we now realize."

F. N. Dodge, Shreveport (Robson), La.

"Bud scales are breaking on 15 pecan varieties," he writes March 16. "This is occurring later this year than it has any of the previous four years that I have taken notes on the time of its occurrence. Apparently this will be a late season with a tendency toward protogyny....The few warm days lately have started the cover crops to growing, but it is a little late for them to make much growth before it is time to cultivate."

Howard E. Parson, Shreveport, La.

"Work was finished painting wounds in the Lay orchard at Gilliam. While there I learned that cover crops in north Louisiana, such as *Melilotus indica*, *M. alba*, hairy vetch and burr clover, have been so badly hurt by cold this winter that they will be of little or no value. There is some doubt that oats will come through and make any crop or pasture. Rye appears to be the only cover crop that will revive enough to make pasture and mature."

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NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"Judging by the interest shown in nut planting there will be quite an acreage planted this spring; in fact, quite an acreage has already been planted," he writes March 2nd. "Many of the new plantings will contain quite a number of Jordanolo trees and some Harpareil will also be planted. There is no question but that the demand for these trees is exceeding the supply.

"I have spent a great deal of time in explaining to prospective planters the difficulties of pecan growing in various parts of California. Many requests for information on the pecan come from people who have an erroneous idea regarding pecan culture. I feel that it is very important to get the facts before them so that they will not plant orchards of pecans under the wrong conditions and regret it later...Much interest is shown in the almond and several people who are planting 100 acres or more have brought their plans in and I have gone over the layout with them. Practically all the new plantings, so far as I have discussed the matter with growers, will consist of the best varieties.

"The almond pollination work has been seriously handicapped by almost continuous rainy weather since the blooming season began. Fortunately it is not necessary to make any crosses for the breeding work this spring, but we have at the same time been unable to continue other pollination experiments to any great extent. Growers feel that there will be a very light crop this year. There has been so little weather favorable for pollination that most of the pistils are expected to drop. It seems probable that some damage will result from the continued rainy weather because insects were prevented from transporting pollen. However, the damage will vary in different districts."

Max B. Hardy, Albany, Ga.

"Cover crops have made great progress during the past two weeks, but are generally a little behind their normal development for this date," he writes from the U. S. Pecan Field Station and Laboratory on March 16th. "Pecans have shown no bud swelling yet although pruning cuts are bleeding to some extent. Only a few of the young chestnut trees are showing bud swelling."

COMPENSATION COMMISSION REGULATIONS

Some time ago the Business Office furnished the U. S. Employees' Compensation Commission with a list of all field representatives who should be supplied with copies of the new Form C.A.76, which lists the medical facilities available to employees of the U. S. Government injured in the performance of duty. It is understood that these forms, together with a copy of the Regulations of the Compensation Commission, as amended, have recently been distributed. Field stations failing to receive copies of these publications should notify the Business Office at once.

## DEPARTMENT GREENHOUSES TORN DOWN

Probably by the time this issue of the News Letter reaches you, one of Washington's most familiar landmarks, the greenhouses on the Mall, will have disappeared. WPA workers began demolishing them March 5th. As the laborers were leveling the antiquated conservatories, the modern greenhouses at the U. S. Horticultural Station, Beltsville, Md., which replace them, were already abloom with carnations, cineraria and roses.

Both Superintendent Beattie and Mr. J. Wise Byrnes, in charge of experimental greenhouses, are to be congratulated on the efficiency with which the transfer of the plants was handled. Some 30,000 plants of hundreds of varieties and species were hauled by truck to Beltsville without the loss of a single one. Of particular interest was the collection of 7,000 chrysanthemum plants, 85 truckloads, that made the trip.

The splendid new greenhouses erected at Beltsville are so extensive and so well arranged that the five glass houses, each 310 feet long and 40 feet wide, and the 194-foot conservatory; which has two wings each 85 feet in length, will take care of the specimens formerly contained in 31 houses on the Mall--with room for more.

The Mall greenhouses were erected in 1902 and at least twice each year in recent times have been the mecca of thousands of visitors, during the holding of the amaryllis show in the spring, and the chrysanthemum show in the fall.

Superintending the greenhouse collection appears to be highly beneficial to the health, since J. Wise Byrnes is but the third man to direct the work since the experiments were started back in Civil War days. He succeeded his father, the late E. M. Byrnes, in 1924.

One of the spectacular stories in connection with the greenhouses on the Mall concerns the introduction of the orange that later came to be known as the Washington Navel. Plants were brought in from Bahia, Brazil, in 1871. Two young trees budded from this introduction were sent, in 1873, to Mrs. Eliza Tibbets at her home in Riverside, Calif.

Fruit of this variety exhibited at a citrus fair held at Riverside early in 1879 apparently attracted very favorable attention, and as a result the variety rapidly acquired an important commercial status, which it still retains.

However, the orange introduction landmark had already been demolished, as these Bahia trees were grown when the greenhouses were farther south on the Mall. The lawn north of the West Wing is the site of the old greenhouses.

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### U. S. REGIONAL SALINITY LABORATORY

While on a recent visit to Beltsville, Dr. O. C. Magistad, direction of the U. S. Salinity Laboratory at Riverside, Calif., gave a short talk before one of our Division seminars on the purpose and the work of the Laboratory, and in particular the special equipment designed by members of its staff for the study of the problems being investigated.

He opened his discussion with a reference to the economic importance of the irrigated agriculture of the western United States, pointing out the high average value of the agricultural products of irrigated land (\$100 per acre), and mentioning the salt (alkali) troubles with which the growers have to contend. It was to help solve these salt or alkali problems that the Laboratory was established. It was located at Riverside largely for the reason that within a driving distance of less than three hours in each of two different directions, two other and quite different climates may be reached. Indio is notably hotter and drier, while in the other direction Torrey Pines is much cooler and more humid than Riverside.

A part of the Station's equipment of considerable interest is a group of concrete tanks, approximately 3 by 10 feet in size, in which plants can be grown and irrigated at frequent intervals with waters carrying chemicals of predetermined concentrations. Dr. Magistad called attention to the fact that evaporation in southern California is rapid, so rapid in fact that it appears likely that enough salt to be harmful to plants might be left at the surface of the soil within a very short time, perhaps even within a few hours, as a result of evaporation from the soil in the tanks when irrigated with water containing the higher salt concentrations. Investigations with salt concentrations as high as 12,000 parts per million have been undertaken. Because of this danger of rapid accumulation of chemicals at the surface of the soil, frequent re-wetting of the soil seemed desirable. Accordingly the tanks were equipped with electrically driven pumps, automatically controlled by time clocks so that water may be applied to the tanks once an hour. Beneath each tank is a reservoir to hold the excess irrigation water. The pumps that circulate the irrigation water draw from these reservoirs, and the bottoms of the tanks that support the soil or sand are made of a porous building-block material through which the excess water from each irrigation drains out of the soil and returns to the reservoir.

Dr. Magistad mentioned some of the results thus far obtained, but stated that as yet he did not consider these sufficiently well replicated to be final. Indications to date are that some crops could tolerate greater concentrations of salt in one climate than in another; that in general the use of water with excess alkali content restricts rather than prevents growth; that ordinarily excessive salt content is harmful without much regard to what the chemical constituents are, but that in the case of some crops an excess of some particular base or acid radical, rather than total amount of salt, is what affects growth.

## U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman (Vegetable crop investigations)

"Soil was made up and put in readiness for seeding tomatoes to flats for the production of plants to be used in the cultural and variety studies," he wrote for the week ending February 10th. "In this connection, it might be of interest to fellow workers who have encountered trouble as we have with ants damaging seedlings in seed flats, where unsterilized soil is used and suitable sterilizing equipment is not had, we have found for tomato seedlings that treating the soil with carbon bisulfide is very effective.

"Old oil drums have been very satisfactorily used as containers in which to treat soil by this method. Not only is this treatment satisfactory but it is simple and economical--24 to 48 hours before the soil is to be used, mix as desired for seeding and put into clean watertight drums, lightly shake the soil down so as to be about 6-8 inches below the top and level, with a dibble or even shovel handle make holes in the soil to a depth of about 3-6 inches and 6-10 inches apart in which approximately 1 teaspoonful of carbon bisulfide is added and the drum covered and undisturbed for 24 hours. It goes without saying that this treatment should be used out of doors, away from fire, and the soil preferably aired overnight before using...

## ADMINISTRATIVE NOTE

Political Activity The specialist was showing some visitors through the new greenhouses and stopped to point out an attractive plant.

"This belongs to the Begonia family," he explained. "Oh," said one of the visitors, "and you're keeping it for them until they return from their vacation?"

Technically speaking, this comes under the head of humorous misunderstandings, but there isn't going to be anything funny if you fail to understand the situation resulting from the Hatch Act. We have tried to make certain that every employee receives a copy of Personnel Circular 84, "Political Activity," of January 16, 1940; and we shall see that you are kept informed of any further legislation on the subject. In the meantime, be sure to familiarize yourself with Circular 84. Even if you've lost your copy, or never had one, there is one near you.

In general, employees of the Department are permitted to make voluntary contributions to a political campaign fund or voluntarily purchase tickets to such affairs as the "Jackson Day" dinners, but they must not solicit or receive such contributions, or sell such tickets. In no case shall such solicitations take place in a Federal building, even by persons not employed by the Government. And while you may attend such dinners, you are prohibited from taking any active part in political management or in political campaigns. Read Circular 84--and heed it!

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THE EMPLOYMENT OF SEASONAL EMPLOYEES

An Irishman, given to boasting, was contending that the bees of his native Ireland were much larger than those in America. "In fact," he declared, "the bees of Ireland are as big as your shape." "Shape?" said a listener. "Oh, you mean sheep? Bees as large as sheep, oh? And what sort of hives do you keep them in?" "Hives no bigger than those you have here," said the Irishman, calmly. "But," persisted the questioner, "how do bees as large as sheep get into those hives?" The Irishman shrugged his shoulders. "That," retorted the Irishman, "is their own dom lookout!"

Getting yourself out of a tight situation resulting from a failure to consider the matter of labor needs for the growing season may be your lookout, but Walter Roney has just been in with an three-year-old memorandum of warning prepared by Carl Schoenhals that offers a lot of good advice.

As pointed out in this memorandum of March 24, 1937, the employment of laborers, assistants, or aides in many instances is not given consideration sufficiently in advance of the actual need to permit compliance with the regulations requiring that wherever possible such persons be employed under appointment. If it is known that the services of a person are going to be needed for an extended period--30 days or more--steps should be taken to request his appointment. Fill out and send to the Business Office the usual appointment questionnaire, routing it, of course, by way of your section leader. Allow sufficient time for the appointment action to proceed through the necessary channels (perhaps two weeks) before the effective date of appointment.

Your letter of authorization provides for employment of unskilled laborers up to a total of 90 days and skilled labor for not to exceed 30 days during the fiscal year. Authorization for such employment, however, is allowed for the purpose of meeting the needs for temporary or strictly intermittent service and is not intended for employment of seasonal employees. The policy of the Department is that employment under letters of authorization be held to a minimum. Stick a pin here!

You must be careful also to see that unskilled laborers are assigned to duties conforming to their appointment. They are not permitted to do work that is properly delegated to a subprofessional employee.

Keep in mind that in requesting appointments or preparing payrolls the first name must be given in full--John Q. Doe; not J. Q. Doe. Of course, if an employee habitually uses his middle name, that can be given in full and the first initial used--J. Quincy Doe.

## ADMINISTRATIVE NOTES

Letter Writing When we were studying the art of letter writing at school, we were told to keep a picture of the person to whom we were writing in mind; or if it were to a stranger, to try to see him or her in our imagination. It just occurs to us that if in writing to the Business Office workers would try to picture the consternation of the file clerks when it comes to filing a letter containing references, say, to inventory, personnel problems, purchases and maybe an informal contract and transportation request, they would decide that it might be more efficient to write several one-subject letters instead.

Consider what it means in the way of delay when we have to send a letter to several different sections to be noted, held for action, copied, etc. One section of the Business Office, for example, handles everything pertaining to letters of authorization and vouchers charged thereto, transportation requests, tax exemption certificates, monthly financial statements, etc. Another handles purchases and supplies. Personnel and inventory are separate section. Still another section looks after leases, rental contracts, field activities, and Compensation Commission cases. To limit yourself to single-subject letters requires a bit more time, but it will save much more than that time by reason of the prompter attention the letters will receive here at Beltsville.

Reading over the foregoing, Mr. Gould suggests that perhaps the problem could be solved by making several carbon copies of letters relating to more than one subject, and sending them along. "I attest the force of the general suggestion," he added "I sometimes receive 3 or 4 letters at the same time and bearing the same date from one member of our staff in charge of a field station, each letter relating to a different subject. It helps greatly in the expeditious handling of the matters included in the correspondence."

Gasoline With reference to contracts covering State-wide service station deliveries of gasoline and lubricating oil, Circular Letter 409 from the Procurement Division of the Treasury Department states: "During the fiscal year ending June 30, 1940, various Federal offices issued invitations for bids....For some States different offices executed contracts with the same company. Procurement Division's issuance of invitations for bids and effectuating State-wide contracts will eliminate the heretofore duplication of action...."

Rental of Equipment Another Circular Letter, No. 412, from the Procurement Division, tells us that contracts for the rental of equipment have been determined to be NOT contracts for the manufacture or furnishing of materials, supplies, articles, or equipment within the meaning of the Walsh-Healey Public Contracts Act. This ruling supersedes par. 19, "Rental Contracts," page 13, Rulings and Interpretations No. 2, issued by the Department of Labor September 29, 1939.

## ADMINISTRATIVE NOTES

Personal Efficiency Do you feel that you are more efficient, worth more to Uncle Sam, than you were a year or two ago--or that you have improved your efficiency to the extent that you could handle more important work? No, this isn't one of those proposed Census questions that have been arousing so much criticism. It is merely a hint that your personnel record should be kept up to date.

In June 1938 the Department had you fill out a questionnaire giving your general education and experience. From these questionnaires qualification punch cards were prepared so that it is now possible to find quickly persons with suitable qualifications when vacancies arise. When opportunities develop that mean a promotion to an employee, these cards help to bring the employee and opportunity together. The Department's personnel policy is to provide every opportunity for the promotion and advancement of qualified employees within the Department when vacancies occur--and this is true of workers in the higher brackets as well as those in the lower grades.

To be of greatest value the qualification punch cards must be kept up to date. A supplementary questionnaire (AD-125-Supplement) is now available on which you may report qualifications or training to your credit since June 1938. There are not enough of these forms available right now to permit us to make a general distribution to all employees, but the Business Office will see that copies are mailed to every employee who feels that he has additional training or experience that should be listed on his card--additional education, additional experience in special fields, additional civil service examinations passed, etc. Write in for the Ad-125-Supplement form if you need it.

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Telegrams Attention is called to the fact that the use of the telegraph is limited to strictly official business. Par. 58, Government Travel Regulations, states: "Telegrams, cablegrams, and radiograms applying for leave of absence or extension thereof or of inquiry as to, or as to payment of salary or expense vouchers, and answers thereto, or those containing any matter of a purely personal nature, must not be sent at Government expense."

A telegram reporting the death of a Government employee is a personal matter unless it can be definitely shown that any delay in notifying others would vitally affect the work under way, such as the necessity of immediately stopping the work until further arrangements could be made for its conduct.



## BELTSVILLE NOTES

Dr. S. L. Emsweller and Mr. J. Wise Byrnes of our ornamental horticulture section are on a trip to Illinois, Wyoming, Colorado and Louisiana to inspect work on roses, lilies and carnations. Dr. Philip Brierley also of this project, made a brief trip to New York to inspect Easter lily disease investigations.

Dr. F. J. Stevenson gave a talk on "The National Potato Breeding Program" at the Farm and Home Week recently held at the University of Maine.

Mr. Earl D. Mallison is again accompanying test shipments of citrus fruits and celery from Florida to the markets in New York, New Jersey and Illinois, in connection with handling and transportation investigations.

Mr. Jacob M. Lutz of the handling, transportation, storage and market diseases project, with headquarters at the U. S. Horticultural Station, Meridian, Miss., is expected in Washington and Beltsville about April 1 to consult with Division staff members and his section leader, as well as to compile reports and manuscripts for publication. Incidentally, he reports a vexing problem at Meridian: It seems that many growers in that section, finding their sweetpotatoes frozen or cold injured, used them for stock feed with excellent results so that several are now planning to put out Triumphs (a high yielding white variety) for stock feed. Since carotene is considered a precursor to Vitamin A, the question arises as to the desirability of developing a high yielding yellow sweetpotato for stock feed. Before going more deeply into this, J. M. asks pathetically: "If a farmer grows sweetpotatoes for human consumption and can not sell them because of price, cold injury or some other cause, and uses them for stock feed, are those sweetpotatoes still a horticultural crop?" He doesn't want to trespass on the preserves of Forage Crop Investigations you see!

Dr. Ross C. Thompson of the vegetable project made a trip the past month to South Carolina to inspect cooperative lettuce breeding plots.

Mr. J. H. Beattie was recently in Ithaca, N. Y. to confer with Bureau and New York State College of Agriculture representatives in connection with the work of the U. S. Regional Plant, Soil and Nutrition Laboratory there.

Mr. H. F. Bergman has just returned to Amherst, Mass. after spending a few days in Washington and Beltsville consulting with section leaders and other workers of the Division in connection with disease and storage problems of cranberry and other small fruits. He also did some work at the Department Library in connection with the preparation of manuscripts for publication.

We regret to learn from California newspapers that Dr. J. R. Furr recently had to spend a couple of days in the hospital as the result of an injury when he was thrown from his bicycle.

Vol. 12 No. 7

April 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI - MONTHLY NEWS LETTER

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
April 15, 1940

No. 8

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Irrigated  
Field plots

"Mr. Reeve and I are at present engaged in determining the wilting range, drainage rate, and field capacity of the soils on which the irrigation field plots are located," writes J. R. Furr of the section of subtropical fruit investigations, with headquarters at Pomona, Calif. "None of this work is completed yet, but several features of some interest have appeared.

"In the wilting range determinations it is necessary to fill the culture cans with air dry sieved soil. This results in the complete destruction of the normal soil structure. In some soils, especially the heavy loams and clays, the usual amount of handling and jarring of the culture cans of dry soil before planting and watering results in appreciable reduction in pore space. Pouring water directly on the soil surface and jarring of the cans in weighing or other operations while the soil is moist brings about further reduction in pore space. In the past the extent of this packing of the soil cultures was not realized and consequently very poor growth of plants resulted in the cultures of some soils. This difficulty has been very largely overcome and we have succeeded by the following procedure in growing excellent plants in soil especially difficult to handle;

"The sunflower seeds are planted in a flat of sand and transferred to the culture cans before the first true leaves appear. The planting is done by pouring the dry soil into the culture cans around the plant roots. The dry soil surface is covered with a layer of absorbent cotton about 1/4 inch thick and all applications of water made through the layer of cotton. By carefully avoiding jarring the dry or wet soil, sufficient pore space is maintained for good growth and root development.

"Incidental to wilting range determinations involving fertile top soils and very poor subsoils we carried out some tests to find out how much nitrate to add to the cultures. In even the top soils it was found necessary to add 10 to 150 parts of nitrogen as nitrate per million of dry soil to get satisfactory growth. Because a plant of 10 to 15 grams fresh weight is desirable, the small mass (500 grams) of soil does not supply adequate nitrogen unless the concentration is very much higher than is necessary in the field. Both the giant and dwarf strains of sunflower have been grown under identical conditions. Under greenhouse conditions, in which light intensity is lower than outdoor conditions, the dwarf, because of its shorter internodes, is quite superior to the giant. The leaf surface of the dwarf is equal to that of the giant but unless the giant strain can be exposed to full outdoor sunlight the stems become so long and succulent that they are difficult to handle. It seems likely that the difference in rate of stem elongation in the two strains is caused by a more rapid destruction of auxin in the dwarf strain.

"In the course of wilting range determination on a soil in which practically all citrus roots are confined to the upper 2 1/2 feet we found that sunflowers make excellent growth in the subsoil if fertilized with potassium phosphate and practically no growth if only nitrogen is supplied. The plants in the top soil, however, showed only slight response to  $\text{KH}_2\text{PO}_4$ . This of course suggests that poor root development in this subsoil may be related to a deficiency of phosphate or potassium but this is a rather remote possibility since citrus has not shown a definite response to P or K on any Southern California soil.

"The drainage rate and field capacity tests are carried out by sampling within 24 hours after rain and at intervals of one to several days for extended periods. The results of these tests corroborate the contention of the soil physicists that no very definite value may be assigned to a soil as the field capacity. They do, however, demonstrate that in some soils, especially the sands, the approximate value established as the field capacity is much more useful as a measure of the maximum amount of soil moisture available to the plant than the moisture equivalent. For example, in one soil which has a moisture equivalent of 6 to 7 percent the moisture content established as the field capacity is about 12 percent.

"The drainage data from a soil in which trees have been affected by root rot is of interest. These results show that drainage is slow in the upper two feet, though this apparently is not caused by impervious material at lower depths; that is, there is no layer above which water accumulates. The subsoil is more open and porous than the surface soil. The water penetrates the upper foot or so of this soil readily when it is dry, but apparently once wetted it swells to such an extent that the large channels are sealed and then percolation is very slow. Gas sampling stations are located on this soil and we have found that for several days after rain or irrigation gas samples either cannot be withdrawn from the second foot or only by applying strong suction, while at depths of 4 to 6 feet samples are always obtained with ease. This is a case of a tight surface soil rather than a tight subsoil."

## DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"Fruit tree buds are beginning to expand and the regular spray work for 1940 is now the main problem attracting our attention," he writes March 30th. "The light snow of the beginning of the week and a brief shower on Thursday night brought a little moisture but the section still needs rain very badly.

"Examination of our spray plots at Ruppel Brothers shows an excellent bud crop--much larger than last year--on the Ben Davis experimental trees. The entire Ruppel Brothers orchard has an excellent bud crop on all varieties (Jonathan, Golden Delicious, Stayman Winesap, Ben David and Collins Red) and if we can get sufficient moisture the 1940 outlook is most encouraging."

He had written March 23d: "Spring is still very slow in arriving! Several light frosts were recorded during the week, although the day temperatures are beginning to reach seasonal levels. Apple buds are just beginning to crack, peach leaf buds are from 1/4 to 1/2 inch long and some plums are in bloom at the University of Arkansas farm.

"Our 1940 experimental work got under way during the week with the application of borax to measles-affected trees on March 19th. The scab eradicator spray was applied to the over-wintering leaves on March 21 and the bacterial spot canker spray on the 22d.

"The crying need in this section is water. Many growers report their spray ponds dry and they will have to haul water for spraying unless we get relief from the drought in the immediate future. The situation is getting serious as the time for the cluster bud sprays draws near."

C. P. Harley, Wenatchee, Wash.

"The Wenatchee Valley has been enjoying real summer weather for the past week or ten days and although it is very welcome and delightful, the effect on our growing season may not be all that could be desired," he writes March 21st. "Buds of all species are pushing rapidly. Apricot bloom is showing in East Wenatchee and another week of this warm weather will mean that our season will be fully two weeks early.

"The present indications are that full bloom in apples will occur about April 20th. In the light of past experience this may result in too long a growing season for adequate codling moth control and desirable color of fruit at harvest. Of course, we hope for the exception and since so many things here in the West are exceptional we still have hopes of coming through with a high quality product."

## DECIDUOUS FRUIT INVESTIGATIONS

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on March 31st he says: "Unusually severe frosts during the past week have been recorded at the Station. The minimum temperatures for March 23 to 27 were as follows: March 23d, 29°F.; March 24th, 31°, March 25th, 26°; March 26th, 20°; and March 27th, 26°. At Wilmington a low of 26°F. was registered March 26th.

"This is the coldest on record for this time of year for 70 years--since the Weather Bureau station was established. This low of 20°F. here at the Station killed practically all strawberry buds that were out and plants have to start out all over again. Usually the very small buds will come through without injury, being more or less protected by the other buds, flowers and leaves, but this frost killed practically all of them. Pear and peach were in full bloom here and I believe that the frost killed most of the blossoms...

"Last Wednesday I made a trip to Chadbourn, Whiteville and Bolton. The strawberry acreage in the Chadbourn section, I was told, is probably about 60 percent of what it was in 1939. Last summer the farmers looked after their tobacco crop and neglected the strawberry fields, resulting in the dying out of many of them. It is estimated that around a thousand acres of strawberries are being set out in this section this spring. Up to last week the Chadbourn Marketing Company had ordered over three million plants to be shipped in, mostly from Arkansas..."

E. S. Degman, Medford, Oreg.

"Interesting results were obtained from the Comice fruits from the fertilizer plots," he writes from the U. S. Pear Field Station. "Fruit from the trees receiving large amounts of nitrogen were noticeably slower in ripening when removed from storage and never attained the quality of the fruit from the trees receiving no nitrogen.

"Chemical analyses showed the fruits from trees receiving nitrogen to have from 12 to 20 percent less sugar when eating ripe than those from the check trees.

"These results are based on a rather limited experiment....

"Pictures indicate that the pear buds were at the same stage on February 15, 1940 as on March 17, 1939."

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## PHYLLOXERA-RESISTANT ROOTSTOCKS FOR VINIFERA GRAPES

Coming as a sort of memorial for our late colleague, Dr. George C. Husmann, who died November 20, 1939, Technical Bulletin No. 697, "Testing Vinifera Grape Varieties Grafted on Phylloxera-Resistant Rootstocks in California," came from the press late in December. The associated authors are Elmer Snyder and Frederick L. Husmann.

"Practically all of the commercial grape varieties grown in California have been derived from Vitis vinifera L., the wild grape species of southwestern Asia," the bulletin points out. "These vinifera varieties now furnish approximately 90 percent of the commercial grape production in the United States. All of these varieties are highly susceptible to attacks by the grape phylloxera (Phylloxera vitifoliae (Fitch)), which attacks the grape roots. This insect now exists in practically all of the principal vinifera grape-producing regions of the world.

"Grape phylloxera is native to the regions in the United States east of the Rocky Mountains. The native grape varieties of the United States growing east of the Rocky Mountains, particularly those from the lower Mississippi Valley, are sufficiently resistant to the phylloxera so that their roots are little affected by it. Such grape species as V. vulpina L.; V. rupestris Scheele; V. longii Prince; V. champini Planch., and others thrive, although the insects may be present on the roots. Selections from these species and hybrids of these and other species have been developed and are used as rootstocks upon which vinifera varieties are budded. At present this is the only practicable method of maintaining satisfactory vineyards of vinifera varieties in areas where the phylloxera insect is present..."

In 1903 our viticultural investigations were started in the vinifera districts of California and have been continued to the present time. Two important lines of these investigations have been the introduction and testing of vinifera grape varieties from all parts of the world and the extensive tests of many different resistant rootstocks to ascertain their use under different soil and climatic conditions existing where vinifera grape varieties may be grown. This bulletin deals primarily with the results obtained in testing vinifera grape varieties grafted on phylloxera-resistant rootstocks in various sections of California.

Some few rootstocks have been consistently more vigorous than others in the major grape-growing sections in California. These investigations have eliminated many of the weaker and poorer stocks and have indicated the more vigorous stocks that can be used satisfactorily. The more vigorous stocks have shown wide adaptability. Many vinifera-stock combinations have proved satisfactory, indicating that affinity of stock and scion has not been a major factor in the success of grafted vines. The bulletin indicates the more important rootstocks and the varieties for definite uses.

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NUT INVESTIGATIONS

C. L. Smith Brownwood, Tex.

Writing from the Pecan Field Station on March 19th he says: "Most of the week ending March 16th was spent in treating pecan trees with indolebutyric acid and transplanting them. A total of 187 trees were used in this experiment, a part of which will be used for chemical analysis at intervals to determine the effect of the treatments on the nutritive condition of the trees.

"The weather continues dry and the barley cover crop on the station has about stopped growing. If we do not get some rain soon, it will probably be necessary to irrigate the station to insure a fair cover crop yield and to protect the trees.

"The temperature on the night of March 13th was about 24°F.; and it was below freezing on March 12th and 14th. A little damage was done to early peaches and plums, but most of the trees had not blossomed at that time."

F. N. Dodge, Shreveport (Robson), La.

"Bud scales have broken on nearly all the varieties," says the report for March 23d. "Staminate blossoms have made their appearance on Nelson. This occurring at about the same time it did in the late year of 1937, and a little later than it did in the intermediate years of 1936 and 1939."

Howard E. Parson, Shreveport, La.

"The wind storm that hit Shreveport recently seems to have been reported widely," he writes March 16th. "Although parts of Shreveport were quite hard hit, all of the staff and their families here missed injury and property loss."

Paul W. Miller, Corvallis, Oreg.

"The forepart of the week ending March 23d was spent largely in taking commercial cost records of spraying walnuts for the control of blight," he writes from the U. S. Fruit Disease Field Laboratory.

"These studies are being carried on in cooperation with the Farm Management Department of Oregon State College. Fifteen Records have been obtained to date. The cost of spraying walnuts for the control of blight ranges from 35 cents to 50 cents per tree. All growers interviewed reported a net profit from spraying, and practically all of them are going to continue to spray despite the current low price of walnuts."



## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"During the good weather we have been engaged in field work while the sun shone aside from the time devoted to annual reports and papers to be presented at the American Tung Oil Association meeting at Tallahassee early in April," he writes March 16th. "Dr. Angelo and Mr. Kilby have nearly completed their mapping but were obliged on Saturday to start putting cloth on the frames over the trees selected for pollination work. The writer spent some time with Mr. Greer at the Tung Farm, planning a fertilizer experiment and planting the trees.

"Heretofore in laying out our fertilizer plots we have used only orchards planted on the square plan, in which adequate designs can be very simply laid out. Here in contour planting it was found necessary to reduce the plot to a unit of five record trees and one guard tree in a single row. Every second row consists entirely of guard trees and hence less than half the trees in the orchard will be record trees. However, no better plan could be worked out for a contour planting. The trees were planted 20 feet apart in rows averaging 35 feet apart, but the arrangement is such that it will be possible to remove half the trees when they begin to crowd, without upsetting the experiment. The treatments to be tested include the sixteen factorial combinations of K, P, Ca, and Mg, each at two levels. Nitrogen is applied to all plots as a basic treatment. For better error control each of four replications is broken down into two blocks of eight plots each, the quadruple interaction between the four fertilizer elements being confounded with the blocks...

"Dr. McCann is preparing slides for study of embryo sac and embryo development in hand pollinated fruits. Further data are being gathered on the effect of artificially induced low temperatures on flower buds. Temperatures range from  $-4^{\circ}\text{F.}$  to  $+35^{\circ}$ , and material varies from completely dormant terminals to flowering terminals."

He had written March 9th: "Last season rather extensive measurements were made of progenies of different parent trees as grown in nurseries in Florida, Louisiana and Mississippi. It is now evident that soil discrepencies have introduced rather large errors and in some cases make the comparison of different progenies rather inaccurate. In planting this year's nursery this week, Mr. Merrill has made four replications of each of the different progenies and for still greater error control, seeds from 169 of the parent trees have been arranged in the so-called 'two-dimensional quasi-factorial' design, considered most advantageous in testing large numbers of varieties. An identical planting of the 169 progenies has been made at Lloyd, Fla. by Mr. Painter and his associates. This plan will save time in taking the measurements of nursery growth, and should make the data much more satisfactory.

## NUT INVESTIGATIONS

George F. Potter (continued)

"Twigs from mature trees brought into the laboratory on January 22 and 29, have now produced flowers rather freely, and a total of 96 percent of them show signs of growth. It is interesting to note that about one third of the twigs exposed to  $-4^{\circ}\text{F}$ . during the latter part of January have survived and now give evidence that they will flower. Somewhat more than two thirds of those subjected to  $+4^{\circ}\text{F}$ . are starting growth. Two of the twigs subjected to  $-4^{\circ}$  are already in full bloom.

"Records are practically complete on the first lot of tung seeds placed to germinate on sterile agar in the incubator on January 11. About 40 percent germination was obtained when the seed coats were removed, but only 1 seed germinated out of approximately 200 whole seeds. All of these have now become infected and there is no further possibility that they will grow. It is possible that better results would have been obtained if those with seed coats had been allowed to remain longer in the solution of bichloride of mercury. This and some other methods of sterilization are now being tried out."

Writing March 23rd, he says: "Recent inspection of 50 tung trees that were inoculated during the summer and fall of 1939 with cultures of the root rot fungus, Clitocybe, gave only negative results. The inoculum used consisted of diseased roots taken from trees that were apparently killed by the fungus and of pure cultures grown on artificial media. Pure cultures of the root rot fungus is now being increased so that inoculations may be made on a larger scale at various intervals throughout the spring and summer months.

"Preliminary tests were made on the germination of tung pollen. The method recommended by Richter for germinating pine pollen, was used with certain modifications. Briefly the method consists of filling a petri dish with paraffin, to a depth of two or three millimeters. Small holes, five millimeters in diameter, are cut in the paraffin by use of a cork borer. Pollen grains are now placed in each hole and from one to two drops of media added. The dish is inverted, thus making a hanging drop in each hole. Twenty-five such drops are possible for one petri dish."

## LOST CAMERA

The Business Office (Inventory Section) is trying to locate a photomicrographic camera, Leitz "Makam," serial No. 2415. It is also cross indexed on our inventory as "Edinger Apparatus" and bears our No. 421.

It will be appreciated if offices and stations will check over camera equipment in an effort to locate this missing item and enable the Inventory Section to complete its annual report at an early date.

## DREAMS--AND HORTICULTURAL NOMENCLATURE

What happened to the lad who used to dream about the time when he would be able to wear long pants? Why, answers the newspaper columnist, he grew up, got married, has five children--and now wears his pants longer than any man in town!

The News Letter is beginning to suspect that Mr. Gould is going to have one of his dreams realized in a good bit the same manner. Some time ago, for example, he was discussing before the American Pomological Society one of his favorite dreams--standardized horticultural nomenclature. Commenting upon a suggested plant registration service for the United States, he insisted that if such a service was to be considered seriously in any broad way, the question must of necessity be injected into it as to whether it shall relate only to fruit varieties, as does the American Pomological Society's code of nomenclature, or be made representative of all the horticultural industries of the country through voluntary participation of the many national, State, regional and local societies interested broadly in fruits, vegetables and ornamental plants. If such a service will be valuable to the fruit industry, he argued, it would be equally desirable for other industries included in the field of horticulture.

Well, he has been presenting arguments of that sort for more than 30 years and nothing much has been done about it--in a broad, horticultural way. But the wind is beginning to shift. We find the American Fruit Grower for March quoting with evident approval Harlan P. Kelsey's remarks before the last meeting of the American Pomological Society to the effect that the adoption of an American Code, or better still, an International Code, for future use in naming new hybrids and other horticultural varieties according to standardized rules and procedure is obviously of the greatest importance in relation to simplified and definite horticultural terminology.

As the American Fruit Grower points out, Mr. Kelsey is chairman of the editorial committee of the America Joint Committee on Horticultural Nomenclature. This committee has completed a listing of 70,000 plant names that will soon be printed as the second edition of the well known "Standardized Plant Names."

"The idea of establishing a better system of keeping plants and varieties correctly named is a sound one," agrees the American Fruit Grower, which goes on to say, "and to this end the American Pomological Society Committee on the Code of Nomenclature proposes that the United States Department of Agriculture take up this work and establish a central place and permanent organization for the registration and preservation of variety names."

The italics are ours--as indicating the way the wind blows. However, there is no assurance at present that this proposition will be officially realized in any near future.

## CHEYENNE HORTICULTURAL FIELD STATION

Dr. Hildreth reports that large numbers of requests for seed of the Danmark tomato continue to come to the station. Seed of the Danmark were obtained from Norway back in 1931 and the variety has been given a test at Cheyenne for several years. It is among the more promising of the varieties discussed in Circular No. 533, "Results of Tomato Variety Tests in the Great Plains Region," by M. F. Babb and James E. Kraus. Dr. Babb got out notices of the introduction recently, sending them to all seedsmen who serve the plains-intermountain region. Seed was turned over to seedmen this year who will grow their increase from it and be ready to introduce the tomato to the trade next year.

The Early Cheyenne pie pumpkin (Circular No. 537, Early Cheyenne Pie Pumpkin, by LeRoy Powers) has received some excellent publicity also. For example, the Country Gentleman for April says: "The Early Cheyenne pumpkin is just the right size to make one pie. The flavor and quality are fully equal to older varieties plus a deeper yellow flesh color. As the name would indicate, this is a product of the Cheyenne Horticultural Field Station, Cheyenne, Wyo., and was developed from a New England pie selection. Since it has shown itself to be from two to three weeks earlier than its parent, the Early Cheyenne should make a hit with the housewife of the Northern States, where the seasons are short. What the newcomer, offered to the trade for the first time this season, lacks in individual size it makes up in heavy bearing; for where the common pie pumpkin grew but 5.8 mature fruits the Early Cheyenne had 9.3 fruits per vine."

Publicity of this sort inevitably meant increased correspondence for the Cheyenne station and it was not surprising to have Dr. Hildreth refer to this angle of the situation in his report for the period ending March 30, 1940.

"Following publication in the Country Gentleman of an article about the Early Cheyenne pie pumpkin," he writes, "in the neighborhood of 100 inquiries from all parts of the country have been received. These inquirers have requested further information about the variety and sources of seed. The article, published independently of this station, repeated information about Early Cheyenne that was given in Circular No. 537. The variety was developed here by Dr. Powers, and was introduced to the seed trade a year ago."

The CCC crews have been raking old grass, leaves and flower stalks out of the areas near the station buildings, and some shrubs have been shifted by another group of enrollees.

Dr. A. E. Clarke of Beltsville, and Mr. W. C. Edmundson of Greeley, Colo. were recent visitors to the station.

## FREIGHT AND EXPRESS ROUTINGS

Under date of March 19, 1940, the Secretary issued Memorandum 855 outlining the emergency procedure to follow since the termination of the freight rate and routing service heretofore furnished by the Procurement Division of the Treasury Department.

This provides that invitations for bids issued in Washington or a point in the field may call for destination prices only if the weight of the items does not exceed 5000 pounds. If the weight involved exceeds 5000 pounds, the invitations for bids shall conform to the present practice of soliciting prices both at shipping point and destination and freight rates and routings must be obtained from the Division of Purchase, Sales and Traffic as in the past.

Less than carload rail freight or express shipments moving on Government bill of lading may be made without detailed routing instructions but the bill of lading must show the name of the initial carrier and bear in the space provided for route orders the notation "Forward via lowest reasonable available route."

In a memorandum dated March 27, 1940, the Bureau of Plant Industry's Property Officer calls particular attention to the foregoing provision since it brings up the question of which initial carrier shall be used when more than one carrier is available at the point of origin. Therefore when a field officer issues a bill of lading to accompany a purchase order he should ascertain from his local agent the name of the initial carrier. If the point of origin is outside of his State, he may be able to learn from his agent whether such carrier allows land grant deduction or will equalize its rates with those of any competing carriers. If the field officer is unable to determine these points, he should call on our Business Office for the information. It is suggested that field officers note the routings on bills of lading covering Washington orders for their stations since these show the prescribed routes and can be followed when making field purchases from the same points of origin.

Whenever possible orders should be placed on a delivered basis, the vendor to include the transportation charge in the cost of the purchased article, thus eliminating the need for a Government bill of lading.

## USE OF OWN AUTOMOBILE

The Act of February 14, 1931, providing for payment of mileage to a Government employee "for the use of his own automobile," in official travel does not authorize such payments unless the automobile is owned by the traveler. Registration of an automobile pursuant to local laws and regulations constitutes prima facie evidence of ownership; also an automobile registered jointly in the name of an employee and his wife is considered as the employee's "own automobile" within the meaning of the Act.

## ADMINISTRATIVE NOTES

Prison-made Products. Two gentlemen who earned their living by picking pockets were walking along together and one was amazed at the frequency with which his companion took out his watch and glanced it. "You must have a heavy date?" he suggested. "Oh, I'm not looking to see the time," replied the other frankly. "I just want to make sure that my watch is still there!"

This is merely by way of leading up to the announcement that the requirement concerning the purchase of prison-made goods is still there. Because of the uncertainty in some quarters regarding the availability of appropriated funds for the purchase of such goods, the Director of Finance has recently stated again that the rule governing the purchase of prison made goods applies to all funds of the Department excepting those made available under the Emergency Relief Appropriation Act.

The items include such things as brooms, brushes, canvas goods, castings, cotton textiles, clothing, desk trays, mattresses and certain articles of furniture. If such purchases are contemplated and there is any doubt as to their availability through Federal Prison Industries, communicate with our Business Office before acting.

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Eight-hour law, Budget and Finance Circular No. 86, Amendment No. 1, of March 21, has the following to say concerning the application of the eight-hour law to all contracts which may involve employment of laborers and mechanics: "The first paragraph, including the quoted clause, on page 2 of Budget and Finance Circular No. 86, issued July 8, 1938, should be changed to read as follows:

'To avoid misunderstanding, in contracts involving the employment of laborers or mechanics only incidentally, as for the installation of equipment being supplied or for packing and crating of household good incident to their transportation, the following clause should follow the eight-hour law clause: "This clause has no application to transportation by land or water, transmission of intelligence, the purchase of supplies, whether manufactured to conform to particular specifications or not, or to materials or articles which may usually be bought in the open market."'"

In this connection it is also pointed out that the convict labor clause deleted from this part of the instructions does not apply to the production or furnishing of supplies. The second paragraph on page two is still applicable as originally stated.

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PERSONAL MENTION

The U. S. Horticultural Station at Beltsville, Md. welcomes the Division of Drug and Related Plants, which recently transferred from the West Wing of the Administrative Building of the Department in Washington, D. C. to Horticultural Building No. 2 at Beltsville. The Division consists of 8 employees, headed by Mr. A. F. Sievers.

We also extend a cordial welcome to the Division of Nematology, headed by Dr. G. Steiner, which has moved from Washington, D. C. to space created for it in the headhouse of the new range of greenhouses at Beltsville that take the place of the Department greenhouses in Washington.

Dr. Frank A. Haasis of Babylon, N. Y. recently visited Washington and Beltsville to confer with his project leader and other staff members in connection with daffodil and lily investigations.

Mr. W. T. Pentzer of the U. S. Horticultural Field Station at Fresno, Calif. presented a paper April 10th before the Pacific States Cold Storage Warehousemen's Association at Del Mone, Calif., discussing "Further Studies on the Fumigation of Emperor Grapes with Sulphur Dioxide During their Storage at 32° F."

Miss Harriette M. Rea of Dr. Magness' section at Beltsville, whose eyesight has been causing her some trouble, is retiring shortly, after 22 years' service. She was guest of honor at a luncheon given by her friends at Calvert Inn last Saturday.

Mr. D. F. Fisher is traveling in Florida and Georgia, conferring with staff members in connection with handling, transportation and storage work on citrus and tomato plants.

Mr. Earl D. Mallison is accompanying further test shipments from Florida to New York, New Jersey, and Illinois in connection with the investigations on the handling and transportation of citrus fruits and celery. These tests will include 11 cars of oranges and 4 of celery, with and without carbon dioxide treatment in transit.

Dr. T. P. Dykstra is on a trip of inspection to cooperative plots in Florida and Alabama, and will participate in a conference and tour of collaborators and cooperators in the National Potato Breeding Program in Louisiana.

Dr. Philip Brierley is continuing his azalea spot disease investigations in South Carolina.

Vol. 12 No. 8

April 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE



THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII U. S. Horticultural Station, Beltsville, Md. No. 9  
May 1, 1940.

Freeze injury in Florida. In an interesting letter to Mr. Gould, Dr. Hamilton P. Traub, in charge of our section of Subtropical Fruit Investigations, tells of an inspection tour south of Orange County, Florida, made late in March to check up on damage resulting from the January freezes. Incidentally, the damage at the Orlando Subtropical Fruit Field Station proved to be slight, even though the temperature dropped to 21°F. Most of the small trees, while frozen back to the mound, have spouted vigorously. Large citrus trees were not defoliated.

Summarizing his observations, Dr. Traub writes that the chief loss was the partial or total destruction of the fruit crop, depending upon the location of the groves, and in the lowering of the quality of the salvaged fruit in many cases. Even the defoliated trees are making a fine growth and were blooming in some instances at the time of Dr. Traub's visit, though it was not practicable then to predict the amount of fruit setting. The great majority of the trees were making heavy growth, however, and appeared likely to set crops of fruit, so that at least a moderate citrus crop may be expected.

"In the Ridge section the citrus trees came through in good condition generally," he reports. "However, in cases of poor air drainage and where the trees had not been properly nourished, the damage seems to have been greater, resulting in defoliation and some twig injury. As a rule, in groves properly situated and nourished there was no defoliation. The citrus trees are in heavy bloom (April 4th); almost too heavy it seems. The flowers appear in large clusters in many cases, and it remains to be seen if the crop will set properly. The chief damage therefore seems to have been the loss of the unpicked crop..."

Lynchee trees came through the freeze very well. At the Wirt place, Babson Park, the large trees were not injured and were in heavy bloom at the time of Dr. Traub's visit. The smaller trees on high land were also uninjured, but some of the small seedlings of the Waachi variety on lower ground were damaged, though the injury did not appear to be great. A temperature of 22°F. was reported at Babson Park, but nothing so low at the Wirt place. Lychee trees at Mountain Lake Estates on the upland were injured on the windward side but apparently not permanently so.

All papayas excepting some that were heated near Babson Park were frozen back. Heating saved some 7 acres at this point, log fires being used, and good prices were realized for the fruit. An even more impressive saving from heating was obtained at the Ward grove near Babson Park where log fires protected avocados from injury with the result that the crop produced a net return of \$10,000. There are 20 acres of avocados in the grove, about half of the trees being large. The smaller trees are the result of budding over a wide range of varieties formerly grown to a few standard sorts--Faylor, Lula and Nabal.

Mangos were very severely injured, but there was no injury to citrus except to the Tahiti lime. The Ivey Futch grove at Lake Placid showed more damage, with avocados defoliated in many cases, and mangos severely frozen, though there was little or no damage to citrus.

"Strange to say," writes Dr. Traub, "the Peace River valley, including the Fort Mead section which usually is colder than the Ridge, was apparently spared...In the Homestead-Miami region the lowest temperature recorded was between 23° and 24°F. West Indian avocados were severely injured. Mango twigs that were in first bloom were severely frozen, but the twigs that were dormant showed little or no injury. The general injury to the West Indian avocados means that there will be no early avocado fruit this season, since only the Guatemalan (late) varieties came through in good condition. Most likely there will be at least a medium crop of these. The fact that avocados on the Ridge made such a good showing will tend to encourage further avocado plantings there, of the Guatemalan race primarily, and possibly also hybrids between the Guatemalan and Mexican races.

"The region north of Miami from Fort Lauderdale to Stuart, with Palm Beach as a center, escaped injury almost entirely. In the Homestead section and on the east coast generally oranges and grapefruit apparently showed little or no damage. Reports indicate that in the region on the west coast north of Fort Myers to Tampa there was less damage along the Gulf Coast, but greater damage as one went inland. This region was not included in my inspection tour. North of the Orlando section, in some groves with poor air drainage, the temperature fell to from 10° to 15°F. and in such cases the damage to citrus generally was very severe. Most of the locations, however, are not submarginal and fared better..."

## SUBTROPICAL FRUIT INVESTIGATIONS

W. W. Aldrich, Indio, Calif.

"The flowering of dates near Indio started in a few locations in December and early January, with the peak of the opening of the early, large inflorescences about March 1," he writes April 9th. "This is about 3 weeks earlier than in 1938 and 1939. Washington Navel orange flowers in our plots near Riverside began to open about April 1, likewise 3 weeks earlier than in 1938 and 1939. This earlier opening is apparently the result of the warm fall and winter. At Indio the monthly mean temperature for November was  $3.1^{\circ}$  above the 61-year mean; for December,  $5.5^{\circ}$ ; and for January,  $4.1^{\circ}$  above. However, Marsh grapefruit at Indio had full bloom during the March 18-23 period, which was about the same as in 1938 and 1939.

"Having completed citrus planting at the U. S. Date Garden and at the Martinez Research Station during late February and March, we started date offshoot cutting and planting at the beginning of April. Results with Saily and Hayany offshoots in 1939 indicated that April 1 planting was superior to February 1 or June 1 plantings. When the sale of offshoots is profitable, growers are inclined to leave on the parent palm all offshoots that develop, and cut them off as fast as they reach sufficient size. However, leaving them on is supposed to delay or weaken flower development. We are now comparing parent palms of Halawy and their offshoots, following two treatments: (1) removing while small all (10 to 15) but 2 offshoots in the fall of 1938, and (2) leaving all offshoots on from the fall of 1938 to the present. Offshoots just removed from Treatment 1 averaged 73 pounds each; those from Treatment 2, 60 pounds. The rate of development of offshoots from each treatment will now be compared. Strangely, parent palms in Treatment 1 produced 6.9 inflorescences per palm this spring and Treatment 2, 6.8. On much younger Khadrawy palms similar treatments in the fall of 1938 resulted in 4.8 inflorescences per palm this spring for parent palms with offshoots removed, and 4.4 with offshoots allowed to remain on the palm. We are still not certain whether differentiation of inflorescence primordia occurred before or after the 1938 offshoot removal.

"Shamel will soon complete the plantings of progeny or promising citrus bud selections in 10 different districts. Furr and Reeve are rapidly making accurate determinations of 'wilting range' for soil in 5 series of irrigation plots. Pomeroy has again tried naphthaleneacetic acid on Washington Navel orange, and also on Marsh grapefruit. Nixon has started a 5-year study of five date thinning treatments on Deglet Noor, and has started plots with both Halawy and Deglet Noor to determine why cutting back strands causes shrivel of Halawy but not of Deglet Noor. Crawford has measured pollen effectiveness in setting fruit for 4 outstanding males in the Indio area, and for pollen held 1 year under different storage conditions. Moore and I have been preparing new Deglet Noor palms for a more thorough study of the effect of water deficits at different times during the summer upon quality of the fruit. We hope fall rains will not destroy our results, as they did in 1939."

## NUT INVESTIGATIONS

Felix S. Lagasse, Gainesville, Fla. (Tung investigations)

"Last week blossoming of our selected tung trees reached their peak so all hands turned to the problem at hand," he writes April 13th. "As a result only 1 tree that is later than the other selections remains to be pollinated this week. A trip was made to Orlando to bag the Montana blossoms on the trees on the station grounds. We were surprised to find that all of the blossom clusters that could be reached on either of the trees were composed entirely of female flowers, with one exception. In this instance an inflorescence had expanded, the lower portion of which consisted of 48 male flowers, but arising in the axil of a leaf of the new terminal growth near the top, a shoot protruded at the terminal of which was carried 4 female flowers. This was the only open cluster on either of the trees. Mr. Dickey of the Florida Station states that he has not observed this type of flowering in Montana before. A return trip was made to Orlando Saturday to bag more female blossoms but no male blossoms are visible to date but should be soon, for the trees have borne good crops yearly according to Dr. Traub. The very striking difference in the blossoming habit of the two so-called Montana trees back of our building at Gainesville and those at Orlando continues to be apparent and will be recorded by means of photographs.

"It may be of interest and possibly help to members of the other two tung laboratories who, due to a later blooming season, still have some pollinating to do (although some radio reports make this seem doubtful) to know of the methods used by us. Instead of untying the bag and removing it at the time of application of the pollen to bagged female blossoms, a sharp knife or scissors were used to cut about a 3-inch slit at the bottom and up one side of each bag. This permitted one to see where the female blossom was located within the bag and then to insert a small brush with a long handle through this opening carrying the desired pollen from the test tube to the female blossom. The slit in the bag was then sealed with a strip of adhesive tape, the tree number and date of application written on the bottom of the bag or if preferred on a metal rimmed tag attached to the limb. The latter must eventually be applied anyway. It seemed to us that this method very greatly reduced the possibility of contamination of the female blossom with pollen other than that desired, as compared with the usual bag removal method, and it also is more rapid. The atomizer method is being considered for another weason. The removal of a number of bags from the first trees pollinated indicated that our pollinations are at least temporarily successful."

He had written April 6th: "The enasculation and bagging of blossoms of the trees selected for breeding work in the Gainesville area was performed throughout the week for blossom development was quite rapid. Unopened male flowers from the selected trees were brought to the laboratory for removal of anthers and preparation of the pollen for breeding work. Excellent cooperation was secured from all members of the Gainesville staff, including the wives, in preparation of the pollen."

## NUT INVESTIGATIONS

John H. Painter, Cairo, Ga.

"The U. S. Field Laboratory for Tung Investigations at Cairo, Ga. moved into its new quarters on the first day of the month," he writes April 6th. "We told the carpenters we were going in on the first, be it April Fool Day or not. We did not fool them. The building lacks the finishing touches but we will be able to function since the most of this month will find us in the field anyway. Unfinished as it is, it is like a palace compared to our old location.

"This week is 'blossom week' in the Santa Clara Valley of California, and next week will be 'Cherry blossom week' at Washington, D.C. we hear, so it is fitting that this report should deal largely with blossoms. The first were noticed March 29, and by April 1 quite a few were showing. The first thing about blossoms of tung is that the 'all female' tree at Thomasville, found last year and tented this spring for breeding purposes, is once more all female. We were considerably surprised to find this tree last year, but this year we find such trees very common; in one grove 16 of 332 trees were 'all female'. Again this year we found numerous examples of all male trees, and there was one tree with quite a few 'perfect' flowers. Both anthers and pistils seem normal. Pollen was produced in the anthers, though it is not known if it was viable. The hardest thing for us to explain is the great number of 'all female' trees found this year. We have found lots of trees with only a few male flowers, but in our 'all female' trees there is no sign of any male flowers or any immature or undeveloped stamens. One of two facts is clear: Either this is an unusual year and they will not 'repeat' next year as our tented female did; or observations on this phase have been slighted.

"The 'all female' trees are quite different in blooming habit from the majority of the trees in that a well developed growth of leaves precedes the opening of the blossom. It has been noticed that the longer the terminal shoot, the greater the number of female flowers. This led us to start an investigation on a number of trees where the ratio of male to female will be recorded on terminals of known length and diameter. A report of the result of this study will be made at a later date.

"The variations in color of the flowers of tung seedlings are almost as wide as the other character variations. We have found pink and white flowers, some almost red and white, others all red, flowers that are red and yellow, and last but almost as attractive as any, one that is as white as dogwood and has a yellowish green throat.

"In an attempt to find a fragrant flower, I had to resort to a hay fever remedy--but with no success either in effecting a cure of the hay fever or in locating a fragrant blossom. As a result, then, of several days' observation of tung blossoms, the only thing I would care to state definitely about them is that they are non-fragrant! "

## NUT INVESTIGATIONS

John H. Painter (Continued)

(Incidentally, the matter of moving into the new quarters, coming at a time when Mr. Painter and his assistants were checking up on selected tung trees made during the past two seasons, caused him to postpone his report on an interesting discovery--that his 1939 selections were going to be much later in blooming than the majority of surrounding trees. When he got around to making the report he found that the Gainesville station had beaten him to it! JAF)

"From this point on," he promises, "we can go a step farther than the Gainesville station, by reporting that with but one or two exceptions our 1938 selections are later than most of the surrounding trees. This can possibly be accounted for by the fact that when the writer made the 1938 selections he paid considerable attention to the trees that had a crop in 1935 and 1937, two frost years. The Gainesville station admits in its report that 'yield in 1938' was the principal factor for selection in that year."

C. L. Smith, Brownwood, Tex. (Pecans)

"On Thursday night, April 11, the temperature reached a low of 30°F. at the station; and on the 12th went to 27°. During the night of the 11th the wind was fairly strong and no frost formed, thus preventing severe damage. However, on the night of the 12th there was a heavy frost that damaged fruit and pecans in unprotected locations. It is yet too early to know just how severe the damage is to pecans on that station, but indications are that it will be serious. I have not had an opportunity to inspect other nearby orchards."

Max B. Hardy, Albany, Ga.

"Pecan trees have made rapid growth during the week and although bud scales were dropped a week to ten days later than last year, the time of receptivity of the pistillate flowers will be approximately the same as last year unless adverse weather conditions slow down the rate of development." U. S. Pecan Field Station and Laboratory, April 6, 1940.

F. N. Dodge, Shreveport (Robson), La.

Writing from the U. S. Pecan Field Station on April 13th he says: "A low of 29°F. this morning with a heavy frost injured kudzu and many other tender plants. Pecans received almost no injury. In 1936 we had our last frost on April 9, which was said to be the latest on record at that time. The frost, however, was more severe than this one."

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"This morning I examined 50 peaches on each of 12 varieties at the laboratory, following Saturday morning's freeze of 29°F., and found from 16 to 98 percent of the fruit uninjured," he reports April 15th. "Average of all varieties was 66 percent showing no browning of tissue. Seedling trees of the breeding project seem to be in good shape also.

"Although the wind blew all night and there was practically no frost, exposed peaches were almost invariably killed, while those protected by leaves were usually unhurt. Charcoal burners were fired in the pollination tents from 1 a.m. when the thermometer touched 32°, until 6:30 a.m. and maintained the temperature above 31° in spite of the wind. Judicious examination yesterday of a few peaches under the tents showed no signs of injury. It appears the laboratory material escaped serious damage, though the big question is whether the microscopic embryos are still alive. Nearly all varieties had shed their shucks and many peaches were almost 3/4 inch in length.

"On Sunday morning the temperature dropped to 35° in the orchard, but since an exposed thermometer registered 33° minimum, probably no further damage was done by the light frost. The general feeling in this section is that growers who have not thinned have suffered little damage in crop prospects, while those who have already thinned may have only 50 percent of a crop left. South of Fort Valley injury is slight but north of here damage is very great, according to reports. Macon had 28°, a new record; Atlanta, 28°, and Toccoa in north Georgia 27°. Reports have been heard of 75 to 100 percent kill to the north, but the only verification I have is two small Elberta limbs from Thomaston with 15 peaches on them, all dead."

He had written April 1: "April 1 marks the end of the "hours of cold" season, and the record for the past winter is 1769 hours, 600 hours above the average, and exceeding by more than 200 hours the total for any of the past 18 winters....."

"It is well established that frosts over vegetation are much more severe than over bare ground, but last week I checked on this with our oats cover crop. On two successive, quiet nights, I found the minimum temperature an inch above the oats 2 degrees lower than over bare ground. The thermometers were protected from radiation and were less than 50 feet apart. When the temperature falls to a critical point, 2 degrees difference means a lot, and I doubt if it will be advisable to plant winter cover crops in our bearing orchards on this account. For years growers have not cultivated their orchards in the spring because of increased frost hazard, and a cover crop in the orchard would have the same effect as cultivation in this respect. I am checking on cultivation now, and while we have had no frosts recently, Saturday night the minimum temperature of the air over cultivated soil was 39°, and over packed soil 25 feet away, 44°. Five degrees difference seems large, but further observations and comparisons may equal it."

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## TWO NEW VARIETIES OF BLACKBERRIES

Under date of March 15, 1940, a joint statement was issued to fruit growers and nurserymen relative to the introduction of two new varieties of blackberries--Pacific and Cascade. The statement is signed jointly by Dr. Auchter and the Director of the Oregon Agricultural Experiment Station.

"The Bureau of Plant Industry and the Oregon Agricultural Experiment Station release for propagation and introduction two new blackberry varieties produced as a result of their cooperative breeding investigations," it announces. "A circular giving a more complete description of these varieties is being prepared and will be issued by the Oregon Agricultural Experiment Station.

"These new varieties, originated from crosses made by George M. Darrow in 1932 and tested since then by George F. Waldo, are named, respectively, Pacific and Cascade and are introduced for trial by those who may be interested in blackberries having many of the qualities of the native western trailing blackberry, Rubus macropetalus Dougl.

"Both of these varieties have much of the flavor of the native wild blackberry; in size and productiveness they are similar to Logan. Their season is about the same as that of Logan. For several years they have been among the best in the frozen pack and canning tests. Recent tests also show that they make a superior jam.

"The Pacific, tested, as Oregon 163, is a cross of Zielinski x Logan, Zielinski being a selection of the native wild blackberry found by Mr. B. C. Zielinski of Salem, Oreg. The Pacific plant is vigorous and productive. It has been outstanding as a frozen pack and also as a canning berry. The shape and size are very similar to the Logan. The berry is quite tart but not so acid as Logan. It seems especially well adapted to the Willamette Valley in Oregon.

"The Cascade, tested as Oregon 237, is also a cross of Zielinski x Logan. Its characteristics are very similar to those of the Pacific. The plant is very vigorous and very productive. The berries are not quite so regular in shape as the Pacific but they are considered by many to possess better flavor than that variety. Cascade has been particularly promising in the Puyallup Valley, Washington.

"Neither the United States Department of Agriculture or the Oregon Agricultural Experiment Station has plants of these varieties for sale or distribution. They are available from commercial sources."



## DECIDUOUS FRUITS INVESTIGATIONS

N. H. Loomis, Meridian, Miss.

Writing from the U. S. Horticultural Field Station on April 13th he says: "Friday night, April 12, the temperature at the Station dropped to 28° F., which caused considerable damage to the fruit. Peaches at the station are a 100 percent loss. About 98 percent of the LeConte and sand pears in trees adjacent to the station were found with discolored embryos. Grapes at the station were severely injured, but fortunately they have been backward in foliating this year so that many of the primary buds that were not forced earlier will be forced now as well as the secondary buds where the primary were injured.

"Strawberries in the Marion section apparently suffered about a 20 percent loss in the district as a whole. The open blossoms and those that had just dropped their petals were injured the most. The large fruits on the ground and close to the crowns escaped with very little injury. Fortunately the strawberries were in full bloom about two weeks ago. The shipping season for the district will probably begin in a week to 10 days. The station strawberry planting was on very low land, and was protected by throwing a heavy blanket of pine straw over the plants; even then, occasional injured blossoms and fruits appear. If the plants had not been protected, the crop would have been severely injured. The first picking at the station will be made either on April 17 or 19. Louisiana selection BK-6-30, N. C. 640, Fairmore, and Blakemore are the earliest ripening varieties under trial.

"Fig bushes in this section were killed by the low winter temperatures in January and February."

John C. Dunegan, Fayetteville, Ark.

Writing from the Fruit Disease Field Laboratory on April 20th he says: "Following a drop in temperature to 24.5° F. last week the temperatures have been more nearly the seasonal level, and growth of trees has proceeded more slowly. Examination of our spray plots shows that the apples have escaped serious injury. The trees were in full bloom on April 15, and would have been ready for the calyx spray application at the end of the week, but their development was slowed down by another drop in temperature on April 17, and the calyx application will not be applied until April 23.

"Overwintered scab lesions on leaves from the 1939 check plot were examined on April 17 following a rain of 0.28 inches during the night. Scab perithecia were much more abundant than in any previous collection made this season but the process of spore maturation was not complete in the majority of perithecia examined. Some ascospores were probably discharged during the night of April 16, and the next rain should be followed by a very heavy discharge."

## DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

Writing from the Fruit Disease Field Laboratory on April 9th, he says: "Recent reports from a number of fruit growers throughout the State indicate that there will be a moderate to heavy bloom on the apple varieties Delicious, Collins Red (Champion), York Imperial, Grimes Golden, Stayman Winesap and Jonathan. The varieites Ben Davis, Golden Delicious, King David and Winesap will have a very light bloom in most localities. Apples are now in the early cluster bud stage and some orchardists have already begun the application of the cluster bud spray....

"There will be some peaches in Missouri this year in spite of the -12°F. that we experienced this winter. On a recent trip in the vicinity of Koshkonong and West Plains the writer observed Elberta trees, some carrying as high as 50 percent live buds. This condition was not general, other trees having as few as 2 percent live buds. The variety McGraw came through with from 15 to 30 percent live buds. The Department of Horticulture reports that there will be a sprinkling of peaches all through the Cape Girardeau district.

"Other fruits appear in fine condition. Present prospects indicate a full crop of pears, cherries, plums, grapes and strawberries."

## ADMINISTRATIVE NOTES

Additional Retirement Contributions. The attention of employees is invited to the fact that it is now practicable to make additional voluntary contributions to the retirement fund, in multiples of \$25, for use in purchasing additional annuities. The money is deposited, with interest as prescribed by law, and is used to purchase additional annuity at the date of retirement. Such deposits are refunded only in case of death, retirement, or transfer to a position outside of the Retirement Act.

Employees who may wish to build up a fund for purchasing an additional annuity should write to the Business Office for Form 3471. When this is filled out, signed, and recorded at the Civil Service Commission, an account book (Form 3472) containing 25 deposit slips and properly identifying the employee and his membership will be sent to him. No money should be sent until approval of Form 3471 and receipt of Account Book No. 3472. In view of the complications involved, voluntary contributions of the type mentioned, cannot be made through payroll deductions such as are used for the general retirement fund.

Those who are indebted to the Civil Service Retirement Fund--because of failure to redeposit deductions previously refunded or because, in cases of administrative error, the proper deductions were not currently taken--must liquidate that indebtedness before becoming eligible to make additional deposits.

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BUREAU DIVISION OF INFORMATION

As some of you know, the Bureau of Plant Industry has established its own Division of Information, in charge of Mr. E. G. Moore, to handle publications and related matters. Its work was discussed at a recent meeting of project leaders of another Division, and since the substance of the discussion is equally of interest to our Division it is summarised as follows:

It was explained by Mr. Cardon that the Bureau of Plant Industry would pay more attention in the future to reporting the results of its work. In many instances this will merely mean a more friendly cooperation with editors and writers who come to us for information. Sometimes it might mean getting together a collection of photographs, or even making new photographs when no suitable ones are available.

Insofar as possible, information will clear through the new division, but this will not always be practical in the field. Requests for information from local newspaper editors can usually be answered with a simple statement of the object of the work and the methods employed. Although there are many instances where it is advisable to give out for local publication a progress report, as a general rule we should clear requests of this kind in the Washington office. This is particularly true of projects that have a broad regional or national interest.

One of the services available through the Bureau's Division of Information is assistance in getting photographs better suited for publication purposes. Most of our photographs are made for record purposes and do not have the "action" desired by editors.

Through an arrangement with the Department Press Service, the Bureau of Plant Industry is using the services of Peter Killian, Press Service photographer, to get "action pictures" of our work. There is no charge for his time. The Bureau pays for materials used, and when he is away from Washington we pay his per diem allowance. On one of his trips for the AAA he stopped over at Lincoln and at Urbana to do work for the Bureau of Plant Industry at no cost for travel. Of course we will not always be fortunate enough to have some other agency finance his trips but some of the Divisions of this Bureau have shown an interest in working up a trip for him this summer and sharing the expense.

His pictures are not released until they have been approved in the Bureau, so field employees need not feel the entire responsibility for views taken. Another point to keep in mind is that we can use Mr. Killian to get photographs that we would like for Bureau publications. Just recently he has made several photographs especially for cover pages of popular publications. Good pictures are always in demand, and we will find many uses for them.

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### U. S. HORTICULTURAL STATION LIBRARY AT BELTSVILLE

The nucleus of a Station library has been established across the highway from the main Horticultural Station buildings at Beltsville. For the present, at least, it will be known as the U. S. Horticultural Station Library, although it is a Bureau of Plant Industry development and will serve the Division of Nematology and the Division of Drug and Related Plants as well as our own Division. A Bureau committee consisting of Doctors V. R. Boswell, G. Steiner, and S. L. Emsweller has been appointed to work out effective procedure in cooperation with the Department and Bureau libraries in Washington and to help build up the facilities. Miss Elizabeth Pendleton of the Bureau of Plant Industry Library has been detailed to be in immediate charge of the library.

About 60 periodicals will be subscribed for by the projects and will be available in the periodical room, beginning in May. About 25 are available now. With one or two exceptions, there are complete files of Farmer's, Department, Technical, and Bureau of Plant Industry bulletins, Yearbooks, Experiment Station Record, and Journal of Agricultural Research. A few back volumes of each of about a couple of dozen of the more important periodicals are already on hand and these are to be supplemented as fast as possible. There are extensive files of Soil Survey reports, Coast and Geodetic Survey maps, topographic maps, and related material. A number of valuable indexes and bibliographies have been obtained, and this sort of reference material plus a card catalog are to be given special emphasis. A large file of experiment station publications is to be built up as rapidly as possible.

Have you any old back numbers of scientific periodicals or old Station bulletins that you want to send to the new library in order to make room for other items on your shelves? The Committee is not asking for personal gifts for the library, but if you have material, either official or personal, that you want to contribute for any reason, its presentation to the library will be a real service. Notify Doctor Boswell of anything you have to offer. If the items have not been already obtained from some other source, arrangements can be made for transportation at no cost to individuals.

The facilities are now admittedly very modest but strenuous efforts will continue to be made to develop them to the point where they will take care of a large proportion of the needs of the Station staff. It can't entirely take the place of the Department Library, of course, but is going to be an enormous help and time-saver for those located at Beltsville.

## PERSONAL MENTION

Dr. Frank A. Haasis of Babylon, New York, is spending a few days inspecting daffodil and tulip plantings and visiting other bulb plantings in New Jersey and Maryland. He will also confer with his project leader, Dr. Emsweller, and other members of the Bureau staff while in Beltsville and Washington.

Wayne Guernsey, who has been a clerk in the Business Office a little more than six years, left last week for the Cheyenne Horticultural Field Station, Cheyenne, Wyo., where he will relieve Robert W. Howell, who is transferring to the new U. S. Regional Plant, Soil, and Nutrition Laboratory at Ithaca, New York.

Another of the Business Office clerks, Herbert L. Bathurst, recently transferred to the U. S. Field Laboratory for Tung Investigations at Gainesville, Florida.

## ADMINISTRATIVE REMINDERS FROM 1939 EDITIONS OF THE NEWS LETTER

Employees serving under w.a.e. (when actually employed)

Military appointments, even though their services are required  
Leave at regular periods, are not entitled to military leave.  
Employment under letters of authorization is limited in the Bureau to temporary and intermittent employment.

Eight-hour The 8-hour work limitation law is applicable to every  
Limitation public contract, including contracts for laundry service, otherwise within its terms which may require the employment of labor by hand or tools for its performance, and where doubt exists as to whether there may be involved such employment the requirement of the law should be inserted in the contract.

A distinction is made in that contracts for the demolition of structures, removal of a portion thereof, and cleaning up the area from which the structures are removed are subject to the 8-hour work limitation--but contracts covering the sale, demolition and removal of the Government-owned structures are not. The work of such removal is considered merely incidental to the sale and so wholly for the benefit of the contractor.

In the same way, contracts for supplies or equipment to be installed by the contractor where the article is purchased in a finished state at a fixed price and installation is merely incidental to the purchase, are also outside the limitations of the 8-hour law.

Contracts relative to agricultural pursuits that may require or involve the employment of farm laborers by the contractors should include the stipulations required by the 8-hour law; but where the contract is one of purchase of a harvested crop, and the harvesting merely a condition precedent and incidental to the delivery, the stipulation need not be included.

Vol. 12 No. 9

May 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y   N E W S   L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
May 15, 1940.

No. 10

Investments    A young woman entered a fashionable jewelry store and ex-  
in Research    hibited a ring. "I'm not sure this was purchased here," she  
                  explained. "Oh, no, it wasn't purchased here," agreed the  
salesman after a brief glance. "I--I didn't really want to find out what  
it cost," stammered the young woman. "I merely wanted to know how to pro-  
nounce the name of the stone. Is it 'turkoise' or 'turkwoise'?" The  
salesman shook his head. "Neither," he said. "The correct pronunciation  
is 'glass'."

A lot of our purchases turn out to be glass instead of the gems we expected, but not agricultural research. There is an investment that is always pronounced "desirable"! The fact that research is an investment and not an expenditure is becoming a good bit better known of late years as a clear line is drawn between true and false economy. Even so, a good bit more would have to be spent to bring agricultural research on a par, in financial support, with research in industry as was clearly indicated by the testimony before a Congressional committee recently of L. F. Livingston, manager of the agricultural extension division of the DuPont Company.

"The chemical industry, as a whole, spends 2 percent of its gross revenues on research," he pointed out. "All manufacturing industry spends about 1/2 of 1 percent of its gross revenue on research. Agriculture, including all funds spent by the Federal Government, and all funds spent by the State Experiment Stations...including the small amount of work being done by groups interested in agricultural development, makes up a fund spent on research in agriculture that amounts to only 1/7 of 1 percent of the value of the agricultural products in the United States. In other words, to put agriculture on a par with manufacturing industries as far as research goes, 3-1/2 times as much money should be spent on research work along agricultural lines."

## DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The winter flood has now been removed from probably two-thirds of the cranberry acreage, which is a radical departure from previous practice," he writes from the Cranberry and Blueberry Disease Laboratory on April 30th. "On four nights during the last week, bog temperatures went down to 23°, 24° and 25°F. There was frost, but probably no damage. The cranberry seedling plantation is still under water.

"A large number of blueberry buds have been injured by frost, but it is doubtful whether there will be much reduction of crop. Flower buds of all varieties are much swollen, and are no longer covered with scales, but the clusters are still tight and solid. It will probably take at least a week of warm weather to bring out the first flowers. The longest leaf buds, of the Adams variety, have reached a length of about 3/8 of an inch, but have not started to spread.

"'Mummy cups' or apothecia of the Sclerotinia fungus have not been retarded by cold weather as much as have the blueberry buds, and the discharge of ascospores has probably passed its peak. A large number of growers have swept, hoed or cultivated their fields to destroy the apothecia, and a few have sprayed. In our experiments, the apothecia have been destroyed by a liberal spray of lime-sulphur (10 percent by volume) plus lead arsenate 3 pounds per 100 gallons, but were not killed when the lime-sulphur was reduced to 3 percent. Apothecia were also killed by an application of either 200, 220 or 300 lbs. of calcium cyanamid per acre to the soil, but we do not yet know how this treatment will affect the blueberry bushes.

"Nearly half our time lately has been spent in the water," he adds, pathetically. "Our water thermograph has had a tendency to stop turning on cold night. We had placed the shelter above water 18 inches deep, but on the 26th another board was added to the lower gate of the bog, and I find that 24 inches is a long distance when measured upward from the sole of a boot!

"Research has included such subjects as the concealment and re-discovery of submarine ditches; and how to cut and remove a square of cranberry turf under water so dark in color that one can see neither the plants nor the shovel!

"The weather throughout the April 16-30th period was, with the exception of the final day, such as to retard plant growth and keep growers in constant fear of frost. On April 30th the thermometer soared to 78°F. and buds began to push out."



## DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"A general rain throughout the section at the beginning of the week has been followed by cooler weather, high winds, a dust storm and hail," he writes May 4th. "The rain on Sunday and Monday thoroughly saturated the soil and furnished another period of favorable conditions for scab infections. An examination of our spray plots showed conidial lesions on the primary leaves. These primary infections were present in all the plots except the one receiving lime sulphur, but were not numerous except in the non-sprayed check plot. Further infections on the larger leaves should become visible during the coming week.

"Peach mummies in two orchards were again carefully examined and no indications of apothecial development were found. However, four mummies were found in one orchard with fresh conidial tufts on them, indicating that the fungus was still alive. Cultures were secured from these conidia."

He had written April 27th: "The second, or calyx, application to the experimental apple plots was applied April 22. The following day a group of plum trees were given their first application in a small experiment to test the effectiveness of two commercial sulphur preparations against the brown rot fungus. In addition, two plots of Elberta peach trees were sprayed with Zinc Lime and Pathox to get a comparison of these two materials in the control of bacterial spot.

"An examination of the apple plots sprayed March 24th with Elgetol failed to show scab lesions on the leaves either in the two plots where the leaves on the ground were sprayed or in the non-sprayed plot. However, the scab fungus apparently is very late in getting started this season and contrasting conditions may develop on these plots in the near future."

May 1st there was a brief shower accompanied by hail. A commercial greenhouse in Fayetteville suffered extensive glass breakage but no glass was broken in the University of Arkansas greenhouses. Very little hail fell in our experimental orchard three miles northwest of Fayetteville. In the vicinity of Springdale the storm was more general and many growers report damage (in some cases as much as 50 percent) to the grape crop.

The week ending May 4th was marked by high winds, in some places reaching tornado velocity, with accompanying damage to property. Two persons were killed at Benton, Ark., and others injured when high winds demolished houses in the area.

Rainfall for April was 6.57 inches, 2.42 inches above normal.

## DECIDUOUS FRUIT INVESTIGATIONS

E. S. Degman, Medford, Oreg.

Writing from the Pear Field Station on April 29th, he says: "It is possible now to observe the initial 'set' of pears. Without making counts, it appears that there is a much heavier initial 'set' on the fertilized plots than on the check plots. The 'Frequent Late' plot appears to have a somewhat lighter 'set' than the other irrigation plots. These differences may tend to iron out since in the past it has been noted that a heavy initial set is usually accompanied by a heavy 'June drop'.

"The shortage of irrigation water this season is going to necessitate the turning under of our cover crop somewhat earlier than would otherwise be desirable. It is estimated now that the orchards will probably be limited to two irrigations with storage water this season."

## WHAT SHALL WE DO WITH OLD POSTOFFICES?

Dr. Lee M. Hutchins (Fruit tree virus investigations) believes he has found a solution to the question of what to do with old post-offices--turn them into agricultural research laboratories! You see, he recently visited Wenatchee, Wash. in connection with his dormant season and early spring work on pink fruit of sour cherries, and became quite enthusiastic over the laboratory at the station there.

"The new Laboratory at Wenatchee (and he spells it with a capital "L") is outstanding in arrangement, facilities and equipment," he writes. "It reflects the careful planning and ingeniousness of Dr. Harley and his colleagues. With all its practical features, the laboratory also is a model of cleanliness and arrangement. It is really handsome--the heart's desire of pathologists and physiologists. It is a lesson on what to do with old postoffices!"

## CHEYENNE HORTICULTURAL FIELD STATION

"Eight thousand strawberry seedlings have been repotted by Dr. Powers' group for transfer to the field sometime this month," writes Dr. Hildreth on April 27th. "Tomatoes have been planted in flats and are now being thinned. Raspberries in the field have recently been uncovered.

"Wild currant selections were transplanted to irrigated blocks for further comparison. Miscellaneous fruits were transferred from the lath house and nursery to permanent plantings. Ornamental trees and shrubs were planted in the arboretum."

There still continues to be a serious shortage of moisture in that part of the country. From January 1 to April 27 precipitation amounted to but 2.77 inches, compared to an average of 4.07 inches for the January-April period.

### WILT-RESISTANT TOMATO FOR CANNING

To the inquiry "Which weeds are easiest to kill?" we have the ready answer, "Usually 'Widow Weeds,' because quite frequently all one need say is 'Wilt thou?' and they 'wilt' at once." Commercial tomato growers on the Pacific Coast, however, are afraid even to whisper 'wilt' since *Verticillium* wilt of tomatoes has become so serious in some areas there that it has been difficult to grow a profitable commercial tomato crop.

Relief is promised by a new variety we have developed in cooperation with the California State Experiment Station, says a press release prepared in the Bureau's Division of Information. This new variety is the Essar, developed from a chance hybrid found by Dr. Michael Shapovalov of our Division and Dr. B. A. Rudolph of the California Agricultural Experiment Station. It is not only superior in wilt resistance, but produces a better product for canning than certain varieties formerly grown. The Essar is now available to growers.

"Failure of standard varieties under disease conditions is an old story," says Dr. Victor R. Boswell. "If a new disease appears and the plant does not possess resistant characters in its hereditary makeup, then it is the job of the plant breeders to develop a variety that does have the hereditary characters to withstand the disease.

"The Essar was developed from a chance hybrid. Several lines were grown from this single plant selection. After testing under wilt conditions, one resistant line was selected after eight generations because of its uniformity of the vine and fruit. Before it was released it was carried through two more generation to make sure it retained its disease resistance and uniform characteristics.

"The Essar joins with the Marglobe and Glovel varieties as disease resistant tomato varieties produced by the Division in recent years. Both the Marglobe and Glovel are resistant to *Fusarium* wilt, slightly different from *Verticillium*, and more widespread."

Although developed primarily for canning purposes, Essar makes a very palatable and attractive dish when sliced fresh. Superficially the exterior of the fruit reminds one of Early Santa Clara as regards the size and shape but actually it is very distinct and unique in its characteristics. It is not as large as Early Santa Clara, the average weight per fruit being slightly over 8 ounces. Since the tendency on the Pacific Coast now is towards the production of smaller canning tomatoes, the Essar's size is a decided advantage. The Essar is smooth and is almost free from growth cracks and green butts, and its scarlet-red color is very attractive.

## HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman (vegetable crop investigations).

"The first cutting of asparagus for the season was made on April 22," he writes April 27th. "The quality and quantity of the 'grass' was good. Our small plot of Paradise asparagus, a California variety, is doing nicely and seems so far to be all that it was suggested...Our first 'pulling' of sweetpotato plants was made this week. Some varieties are very slow."

N. H. Loomis (small fruit investigations).

"The first strawberry shipments were made from the Marion district this week," he writes April 27th. "The fruit was fairly large for Klondike, but was a sickly reddish color and white cheeks were common; also it was extremely soft and tender, appeared puffy and lacked quality. This was due to continued cool and moist weather."

"There is an extremely heavy foliage growth on all the strawberry plantings this year, probably due to the fact that they were fertilized late in January and the cold weather prevented any growth for some time, then the weather moderated at the time of the usual spring flush of growth and the fertilizer, which had been ineffective up to this time, caused a soft rank growth. This growth has retarded ripening. At the station the last application of fertilizer was applied about the first of December and normal growth obtained."

He wrote April 13th: "April 12th the temperature at the station dropped to 28°F. which caused considerable damage to the fruit. Peaches at the station are a 100 percent loss. About 98 percent of the Le Conte and sand pears in trees adjacent to the station were found with discolored embryos. Grapes at the station were severely injured, but fortunately they have been backward in foliating this year so that many of the primary buds that were not forced earlier will be forced now as well as the secondary buds where the primary was injured."

"Strawberries in the Marion section apparently suffered about a 20 percent loss in the district as a whole. The open blossoms and those on the ground and close to the crowns escaped with very little injury. Fortunately the strawberries were in full bloom about two weeks ago. The shipping season for the district will probably begin in a week to 10 days. The station strawberry planting was on very low land, and was protected by throwing a heavy blanket of pine straw over the plants; every then, occasional injured blossoms and fruits appear. If the plants had not been protected, the crop would have been severely injured. The first picking at the station will be made either on April 17 or 19. Louisiana selection Bk-6-30, N. C. 640, Fairmore, and Blakemore are the earliest ripening varieties under trial."

## NUT INVESTIGATIONS

Atherton C. Gossard, Meridian, Miss.

"The test plots of winter cover crops for the pecan orchard received a real test this past winter," he writes from the U. S. Horticultural Station on April 27th. "It is possible that some of the crops that failed to survive the zero temperatures, and those that survived but which are starting slowly this spring, would do much better during and following a more nearly normal winter. The crimson clover is ahead of all the crops not tried before, in both stand and growth. It is in full bloom at this time and is making a beautiful showing. It shows promise of making a good winter cover crop here. The giant southern bur clover is making a good cover, but is behind the crimson clover in growth. It has the advantage, however, of reseeding itself each year. Red clover shows some promise, but has a poorer stand than either the crimson or bur clovers. It might compare favorably with them, however, after a more nearly normal winter. Canada field peas and wild winter peas were completely wiped out by the cold. None of the vetches except the hairy vetch, which we have used regularly here, have enough stand to amount to anything. The hairy vetch, however, continues so far, to be our best winter cover crop. It has a heavier stand and growth than the crops in the test plots, not excepting the crimson clover.

"The pecan trees in the station orchard have just about come back to the stage at which they were when the new growth was killed by a freeze on the morning of April 13. Moneymaker was the most severely injured of the varieties in the main station orchard; and Moore, the least. The Moneymaker trees were set back a little over two weeks in growth; Moore, about 10 days. Of the trees in the variety row, Brake was injured most. It is just now beginning to bud out again; and some of the wood was damaged. Mahan appeared to suffer the least of all our varieties."

He had reported April 13th.: "A freeze of 28°F. April 13, nearly a month after the average date of the last killing frost, did a great deal of damage to most kinds of crops in this section, and injured pecan trees to some extent. All new growth, which was two or three inches long on the most vigorous trees, was killed. All of these vigorous trees, two years old and older, have strong secondary buds, which will produce new growth. Small trees, especially those transplanted last year, had been badly injured by the past winter's zero temperatures and were requiring careful attention this season. Most of these had started growth and were in a very tender condition, and were particularly susceptible to cold injury."

C. E. Schuster, Corvallis, Oreg.

"The season is moving along rapidly but with considerable contradiction in blooming habits, especially in the black walnuts and the English walnuts," he writes April 30th. "Some black walnuts are in bloom now two or three weeks at least. It rather upsets the plans for walnut pollination, and in planning work."

## NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"The prospects at this time for a pecan crop in Georgia are not so very promising," he writes April 27th. "In all orchards visited, except two, there were trees showing moderate to heavy pistillate bloom, and other trees showing light or no bloom. In the two exceptional orchards noted, one had a very heavy pistillate bloom on all varieties, particularly the Schley, and the other had practically no bloom--not even catkins. Both orchards have had excellent care, but the first lost the nuts last year largely from scab while the second was sprayed and produced a very heavy yield of very inferior nuts. In this latter orchard crotalaria was grown as a summer cover crop and allowed to grow so late that the trees suffered from drought in late summer and fall.

"In our orchards at Philema there will be a generally light crop on most trees. Some of the seedling trees are blossoming very heavily and some of the Stuart trees give promise of heavy pistillate blossoming, but the Schley bloom is very light. This is not entirely unexpected since the Schley crop was quite heavy in 1939 on most trees, and the Stuart crop quite light. Some of the seedling trees blossoming heavily this year also produced heavy crops last year."

C. L. Smith, Brownwood, Tex.

"The damage to the pecan crop in the station orchard by the freeze of April 11 and 12 was very severe. It is not yet possible--May 1--to estimate the damage because some flowers are being forced on shoots originating from secondary buds. However, most of these flowers appear to be weak and most of them probably will drop off. In the H. G. Lucas orchard, 1/2 to 1 mile from the station orchard, no apparent damage was caused by the freeze. We are having to use trees in this orchard for all our pollination work....I made a trip to Wharton, about 250 miles south of Brownwood, during the week. The pecan trees there usually bloom 2 to 3 weeks earlier than at Brownwood but this year there is less than a week's difference. This is attributed to continued cool weather during the spring that has extended almost to the coast. There was apparently little if any frost damage to pecans south of Austin. Reports from different areas north of Austin indicate serious damage in some orchards and little or no damage in others."

F. N. Dodge, Shreveport (Robson), La.

"Pistillate bloom is lighter on the trees in the Bermuda plots than it is on the trees in the cultivated plots," he reports for the week ending April 20th. "No differences are apparent between any other treatments. The trees in the Bermuda plots are smaller than those of the cultivated plots, they always have a heavier drop of nuts than the cultivated trees, and it takes almost twice as many nuts from the Bermuda plots to make a pound as it does from the cultivated plots. All of this should contribute toward large differences in the yield of nuts per tree this year from the trees in the two types of orchard culture."

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"Interest this week has centered on the damage caused by the freeze of Saturday morning, April 13th," he writes April 20th. "As indicated in a previous report, this damage is exceedingly 'spotty'. As a result of the week's observations we have come to the conclusion that our attention was directed first to those areas where the damage is worst..

"Generally speaking, in all the orchards it is the trees on low wet ground that are hurt and these trees would not have borne much of a crop anyway. Taking the Louisiana-Mississippi area as a whole, I believe one can safely say that the damage is not over 10 to 20 percent. No damage has been reported in the East, and tung oil production in America this season will not be seriously reduced.

"The program of artificial freezing of nursery trees was brought to a close this week. Some 36 tests have been run since January 15th. The freezing chamber is large enough to accommodate 8 trees in tubs of soil and each lot consisted of 1 tree each from 7 fertilizer treatments, plus 1 check not fertilized. When completely dormant these trees were subjected to temperatures down to  $-4^{\circ}\text{F}$ . but toward the close of the period the temperature of  $15^{\circ}$  above seems to have killed practically all of them. After exposure these trees were transplanted to the field where their behavior during the season will be observed. A considerable number of detached stems from trees that had received similar fertilizer treatments were included in each test and the last of these are now being examined for injury. The outstanding feature of the data is the very great variability in different individual trees. This is to be expected in seedlings. In spite of this factor, it is believed that when a statistical analysis of the results can be made, a good deal will be learned from the experiments of the season. We are now budding a special block of trees to provide clones for this type of experimentation during the coming winter."

He had written April 13th: "During the breeding season Dr. McCann has been making some additional pollinations. A representative number of flowers are being collected and fixed at definite intervals after the pollen is applied. This will provide supplementary material with which to work out the cytology of fertilization and embryo development. In the laboratory he and Mr. Berwick have been working steadily cutting slides from similar material collected and fixed in the spring of 1939.

"It is still a question whether the fungus Clitocybe tabescens actually causes the 'crown girdle disease of tung.' From a tung tree recently killed by 'crown girdle', 20 pieces of diseased tissue were planted on culture media in test tubes by Mr. Hines. The fungus Clitocybe grew from only two of the diseased pieces, while a large number of other fungi and bacteria developed from the other pieces. All the isolates are being increased for inoculation purposes."

## NUT INVESTIGATIONS

Felix S. Lagasse, Gainesville, Fla. (Tung investigations)

"As more and more of the brown kraft paper bags were removed from the hand-pollinated female tung blossoms it became evident that the percentage of such blossoms setting fruit was to be lower than anticipated, which, of course, is most disappointing," he writes April 27th. "However, it set us thinking as to the probable cause which in turn has resulted in longevity studies with tung pollen, but because of the very low percentage of even fresh tung pollen that it has been possible to germinate, only meagre data has been obtained as regards this relationship. At first the phenomenon of bursted pollen grains, as a result of osmosis, was interpreted as germination and as indications of the viability of the pollen, but awaiting Dr. Potter's guidance on this point we are now well straightened out.

"It now seems to us very possible that the viability of tung pollen may be very closely related to its ability to burst in water or weak sugar solutions for it was found that the longer the pollen had been removed from the tree and left under normal atmospheric conditions the lower was its ability to burst. Fresh pollen, on the other hand, would go through the process of osmosis within two hours time to the extent of 90 percent. Considerable variation in this phenomenon was found to exist in the pollen from different tung trees as well as pollen taken from immature and mature flowers from the same tree. For example, pollen from some trees has dropped in this respect from 95 percent to 1 percent in 48 hours. Also the range between tung trees has been 81 percent down to 44 percent for pollen handled in the same manner. This phenomenon of osmosis with respect to tung pollen was of course best secured with water, and only enough agar ( $1/8$  of 1 percent) was added to help float the pollen. Due to the difficulty with which tung pollen is germinated artificially, if further work corroborated the possibility of using this phenomenon of osmosis as an indication of the viability of tung pollen, it would materially reduce the time necessary to evaluate the pollen obtained from any tung tree, as it could be readily ascertained in two hours time."

John H. Painter, Cairo, Ga. (Tung investigations)

"Disbudding or the removal of unwanted buds by rubbing them off very early in the spring and leaving the buds which were wanted to force out, has appeared to be fairly satisfactory," he reports April 27th. "In almost every case, in spite of rubbing this bud off, a new bud has been formed and is now apparently ready to force. Last winter, when we were transplanting seedlings, the ease with which buds were lost, caused us considerable anxiety. The results of this disbudding test, if nothing else, has set our minds at ease on that score. We have been unable to find a single transplanted tree, which we set out, that did not live."



## MIMEOGRAPHED LEAFLETS AND FORM LETTERS

Bureau of Plant Industry Memorandum No. 1097, dated April 22, and signed by Mr. P. V. Cardon, Assistant Chief of Bureau, tells of a series of meetings held by him and Mr. E. G. Moore, in charge of the Bureau's Division of Information, in which the broad objectives of that Division were discussed and in particular the problems connected with the handling of routine correspondence. It was decided:

1. That each Division of the Bureau should send to the Division of Information a sample of every mimeographed leaflet or form letter now used in routine correspondence. (We have followed this plan in the past, but to make certain that we have omitted nothing, please mail at once to Mr. W. W. Gilbert, U. S. Horticultural Station, Beltsville, Md. two copies of every mimeographed "brief" or form letter you are now using.)

2. Where 10 or more letters a week are sent out in answer to questions on a specific subject we should give careful consideration to the matter of working up a mimeograph statement on the subject.

3. When new statements are prepared they should be sent to Mr. Gilbert for preliminary editorial attention and transmission to the Division of Information. Mr. Moore will return them promptly with any suggestions for change in the manner of presentation. We will then arrange to have the stencil cut or keyboard rolls, etc. prepared and sent forward in the usual manner through the Division of Information which will see that we get the number of copies requested. That Division will keep a few copies for use in answering inquiries, and will retain the stencil or the keyboard rolls.

4. In the past stencils and keyboard rolls for such mimeographed or multigraphed material have been filed with our Business Office. In future they will be filed by the Division of Information. All stencils and keyboard rolls now on hand should be sent to Mr. Gilbert for transmittal to the Division of Information. That Division will thus be able to take care of re-orders promptly. Of course, whenever a new edition of a leaflet or form letter is requested, the author will be given an opportunity to revise it before it is run off.

5. In this connection, it is very desirable that we go over our mimeographed leaflets and form letters occasionally and examine them rather critically--especially those that have been in use for a good many years. They may need revision.

If there are any questions about the new arrangement, the Bureau's Division of Information will be glad to answer them. Telephone Miss Henegan, Division of Information, Branch 2531 or 5777. She is now located in the West Wing--Room 234-W.

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**WATER, WATER, EVERYWHERE--AND THE BEST!**

For the benefit of those field men who have been in the habit of bringing their own drinking water with them on their visits to Beltsville, we are glad to announce that a comprehensive analysis by a chemical engineer reveals that at Beltsville we have one of the finest natural waters in the United States!

The discovery, as is frequently the case with outstanding discoveries in the field of science, was accidental. It resulted from the misguided attempt of a salesman to get Vic Lumsden to buy a "water conditioner" for use in connection with his official work. Of course, a good bit of study has been given of late years to the harmful effects of hard water on greenhouse soils and composts in general, and equipment has been devised to maintain a definite and steady acidity or alkalinity, as well as to reduce or eliminate lime, magnesia and other elements. Such "water conditioners" actually do help materially in getting a satisfactory growth of orchids and ericaceous plants where the water supply is hard and detrimental to their growth, so Vic was sufficiently interested to supply a sample of Beltsville water for analysis. The result? The salesman astonished us by bringing in a chemical analysis that proves we do not need a water conditioner at Beltsville. The chemical engineer reported: "This is one of the finest natural waters I have seen."

**REGISTERED MAIL**

Official matter entitled to be mailed free of postage under penalty privilege (under frank) may be registered. (Section 1211, Postal Laws and Regulations.) The registration fee must be paid on such matter mailed from any point other than Washington, D. C., however, unless it is mailed at such point by an official whose headquarters are at Washington, D. C., but who is temporarily absent from that station. Where such an official desires to register the material without paying the fee, he notes on the package: "To be registered. John Doe, Specialist, U.S.D.A., temporarily absent from Washington, D.C."

All printed matter sent under the penalty privilege (frank) in connection with official work (except publications issued by the Department) must be in packages weighing less than four pounds--unless a single book is being sent that weighs more than 4 pounds, in which case the postmaster's attention should be called to this fact so that special arrangements may be made for shipping under the penalty privilege.

When it is necessary to register material sent under frank, outside of Washington, and by employees whose headquarters are not at Washington, D. C., the registration fee must be paid at the place of mailing. Reimbursement for such expenses may be claimed in an expense account voucher.

Care should be taken to see that all matter sent by registered mail is securely wrapped and sealed in accordance with Postal Regulations.

PERSONAL MENTION

The following field trips have been authorized for members of the Beltsville staff:

Drs. V. R. Boswell, J. R. Magness, and H. A. Jones to attend conference in Philadelphia of staff members and others interested in the research program of the Eastern Regional Laboratory engaged in research on Industrial Utilization of Farm Products and By-Products.

Dr. F. J. Stevenson to harvest potato breeding plots in South Carolina, Louisiana, and California, and to confer with cooperators in other States on potato breeding problems.

Mr. B. D. Ezell to New York to observe results of investigations of carbon dioxide treatments on apples.

Dr. C. E. Steinbauer to plant experimental peanut plots in Virginia.

Dr. V. R. Boswell to South Carolina and Georgia, to consult with staff members at the U. S. Regional Vegetable Breeding Laboratory at Charleston and with collaborators on vegetable breeding work in progress in southeastern U. S.; also to make plans for future vegetable breeding investigations in the South.

Dr. W. D. Moore of Eifton, Ga. was a recent Beltsville visitor.

Drs. Moore and E. V. Miller of Orlando, Fla., have been conducting transportation tests with tomato plants shipped from the South for transplanting in the North.

Dr. L. A. Schaal of the potato project, who has been stationed at St. Paul, Minn., for the past two years, has been transferred to the Greeley, Colo., Station, where he will conduct investigations on potato diseases.

Dr. L. A. Maynard of the U. S. Regional Plant, Soil, and Nutrition Laboratory at Ithaca, N. Y., made a hurried business trip to Beltsville last Wednesday, accompanied by Mr. C. E. Schoenhals.

Dr. J. S. Caldwell of the vegetable project was struck by an automobile about two weeks ago while crossing the Washington-Baltimore Boulevard at Riverdale, and seriously injured. While X-rays disclosed no fractures, other injuries are making his recovery a painful one.

The Bureau of Plant Industry Five, including three members of the Beltsville Station staff--Jack Ferrall, Frank Goll, and Wade Thomas--won the championship of the 16-team Agricultural Interbureau Duckpin League on the final night of the season, by edging out the Interbureau and Farm Credit teams by a single game. The Interbureau team includes Ray Jones, Herb Block, and Bob Linehan, also on the Beltsville staff. The Interbureau League, one of the most popular of the Department's employees' recreational activities, completed its 25th season on May 2.

Dr. Matthew Drosdoff, who transferred to this Division from the Division of Soil Survey, has joined the staff of the U. S. Field Laboratory for Tung Investigations at Gainesville, Fla., where he will conduct soil investigations in the southeastern states, in connection with the tung investigations.

Vol. 12 No. 10

May 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES  
SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only; and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
June 1, 1940.

No. 11

Research in Agriculture Pointing out that private industry is well aware of the dollars and cents value of research, as shown by its investment of an estimated \$250,000,000 annually in such activities, Secretary Wallace recently declared that the scientific work of the Department is basic. "The conservation, action, regulatory, and all other programs rest upon this work," he said.

Among the benefits the plant industries have received from agricultural research, he listed our work in connection with the lettuce industry in the Southwest. The Southwest, which produces about half our commercial lettuce crop, was threatened by brown blight. As you know, we were able to create disease-resistant sorts that withstood blight as well as mildew, so that the lettuce industry has gone along safely.

"In 1927," says the Secretary, offering another illustration from our work, "the tomato shipping industry in Florida was faced with ruin because of a combination of two diseases, Fusarium wilt and nail-head rust. A new variety of tomato, the Marglobe, developed by a Department worker, the late F. J. Pritchard, withstood both diseases. The existence of our large tomato and tomato juice canning industry depends upon Marglobe and other improved varieties."

Agricultural research is not a thing concerned with shadowy possibilities of the future; it is helping farmers here and now to produce efficiently and, in consequence, more cheaply. And it is constantly aiding in raising the quality of farm products, to the ultimate benefit of the consumer.

## SUBTROPICAL FRUIT INVESTIGATIONS

W. W. Aldrich, Indio, Calif.

"The development of the 1940 date fruit crop is now entering the summer phases," he writes May 16th. "Fruit has about completed the initial, slow growth period; and, for bunches pollinated before March 1, is beginning its period of rapid increase in fresh weight. In many commercial date gardens the fruit bunches have been pulled down and tied to a leaf stalk, placing the bunch below the lowest leaves. Some growers have completed the final bunch thinning, consisting of removal of the center strands. A few growers have started the 10 to 14 day frequency of irrigation. The importance of the timing of such commercial operations is of interest in our research, thus Nixon is now completing his "heavy" bunch thinning just previous to rapid fruit enlargement for comparison with "heavy" thinning about two months earlier, soon after pollination, at the Martinez station. In the Mitchell garden he adjusted the leaf-bunch ratios to 6, 7.5, 9 and 11 leaves per bunch, for the beginning of his 5-year experiment.

"For the coarse sand in our irrigation plots in the Cavanagh garden, Moore finds that during average spring weather, three weeks between irrigations permitted water deficits which prevented maximum rate of leaf elongation. This grower, who has been closely following our measurements, immediately increased the frequency of the irrigation of his 50 acres. Young is measuring leaf elongation and leaf nitrogen in the MacFarlane garden to determine whether the omission of nitrogen fertilization for two years will result in a nitrogen deficiency in the palms as rapid summer growth begins.

"Since at this time spring cover crops might be expected to seriously compete with the palm for soil moisture and nitrogen, we selected early May for the harvesting of our cover crop plots. Hubam clover (Melilotus alba annua) produced much more dry material, both of tops and of roots, than Melilotus indica, wedge pea (Lathyrus sativus), or any of the vetchs (which again mildewed badly). The October 1 planting of Hubam clover gave larger yields of dry matter than winter seedings; whereas Melilotus indica produced about the same dry matter when planted February 1, as when planted October 1.

"The general efficiency of our research has been increased by several additions to our mechanical equipment. In the laboratory Young has increased the speed of grinding date leaves with the new, medium-sized, Wiley mill. With the new 4-speed-forward pickup truck, Leach hauls fertilizer or offshoots anywhere, in spite of dry sand or high irrigation borders. Dollins, at the Martinez station, has just completed the realignment of irrigation borders in spite of hot weather, with the new 20 HP pneumatic-tired tractor."

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"In his annual forecast, W. C. Bewley of the Georgia Peach Growers Exchange predicted a crop of 5972 cars of peaches for Georgia this season," he writes May, 13th. "Last year Georgia shipped an estimated 5739 cars by rail and truck and has been averaging around 8,000 cars annually. Usually the Elberta crop is twice as large as the Hiley crop but this year slightly more than 2400 cars of each variety are expected. The heavy plantings of Hiley in the Fort Valley area, where the crop was reduced only slightly by the freeze, account for the favorable prospects of this variety."

"Last week we started thinning peaches in the variety and seedling test blocks, fully two weeks later than last year," he wrote May 6th. "The pits have not begun to harden as yet. Curculio infestation seems to be light, nevertheless the fruits picked off are being gathered and destroyed."

"Trees used in making cross-pollinations this year are carrying medium to heavy loads of fruit, and in some cases may require thinning to avoid breakage. They are still enclosed in the cheesecloth-wire frames, and look unusually healthy and advanced, probably due to the shading effect of the screen. Since the peaches are uniformly large no appreciable drop of fruit is anticipated in the next few weeks."

"The remaining trees in the old stock orchard were pulled last week to make room for next year's crop of seedling peach trees...The rows on Shalil and 41498 rootstocks were all that remained, and the superiority of the Shalil rootstock was still evident in the size and vigor of the old trees."

He had written April 23d: "For several weeks winter injury to the trunks of peach trees has been evident in weak foliage development, except in cases where growers followed recommendations and applied nitrogen fertilizers to the injured trees. In the latter case there is little or no indication in the foliage that the trees have been injured."

"A small percentage of trees in Mr. Baird's and other's orchards are dying now, but in nearly every instance examined the cause of death has been the killing of bark below the ground line. Injury below the ground line apparently is not associated with trunk injury, and only recently became evident in dying trees. Now more of this type of injury has been found, but is not expected to be serious as the injured trees are seldom completely girdled. Some injury of this type was found in trees in the stock orchard, but none in the younger variety block. Thus far, above-ground trunk injury has not been seen to kill any trees where the injured bark has shown recovery, and as per previous reports, very few injured trunks failed to renew cambial growth."

## DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"An unusual and interesting condition is prevalent in the whole district this season that threatens to make extension pathologists of all of us," he writes April 30th from the U. S. Fruit Disease Laboratory.

"Extremely severe blossom wilt and mild die-back is common, but more severe in the district lacking an adequate supply of irrigation water. Most growers believe the condition is the start of fire-blight, and they have been much concerned. It is difficult to make growers believe that the trouble is due to irregular water relations, but the records and our observations indicate the probable course of events were as follows:

"In only three of the last 18 years has rainfall reached our average. This has materially lowered the natural water-table and no doubt has had an influence on tree vigor. The past three winters have been extremely mild and probably have allowed wood rotting organisms to make more headway in older trees than is usually the case. In particular, the last two years have been extremely dry, the past year approaching our driest year on record.

"From June to the last of November last year, 1.96 inches of rain fell and our average for the period is 9.95 inches. November was very dry, with only .31 of an inch of rainfall. Most growers quit irrigating after September, and as a result the soil became excessively dry during the fall months. Undoubtedly, many of the feeder roots in the upper soil layers were killed. Then during December practically 7 inches of rain fell, which nearly all went into the soil with very little run-off. In certain orchards underlaid with hardpan formation, this must have raised the water level rapidly and caused root flooding and killing of some of the larger roots. Trees bearing heavy crops last season appear to be most susceptible to the die-back condition, and the extremely heavy bloom put out by all trees this spring further devitalized them. Some trees did not show the die-back effect until young fruits were forming.

"On the night of April 20, temperatures dropped to a low of 25°F. at Parkdale, and in some orchards of the lower valley. Injury is severe in some orchards where it is doubtful whether more than 10 percent of the fruit will remain. The Bartlett pear seems to be injured worst; Anjou pears next and then Bosc pears, with some killing of Delicious apples. The apple crop, however, has not been injured to a commercial degree...

"After an early warm spell that hurried bud development, the weather turned cooler and brought several rainy periods. Anjou pears came into full bloom at the Experiment Station Farm on April 8th--the same bloom date recorded for last year."



### SEVEN NEW PEACHES AND A NEW PLUM

Under the title "Seven New Peaches and a New Plum for the Western States," Circular No. 552 by W. F. Wight tells of recent introductions in connection with the deciduous fruit-breeding work we are conducting at Palo Alto, Calif. Two distinct types of yellow fleshed peaches are represented in the ancestry of these new varieties; one with comparatively small flowers and fruit and with more or less abundant external red coloring and with red pigment also in the pit cavity; the other a type of pure yellow fleshed fruit with comparatively large flowers.

Of the varieties described in the circular, Leeton is a yellow fleshed semifree ripening with Triumph; Maxine and Penryn are yellow fleshed freestones ripening before Elberta; Nestor is a drying type freestone; Stanford and Ellis are yellow fleshed late midsummer clings; and Farida is an early yellow fleshed cling ripening with Tuskena.

The promising Padre plum described in the circular, is a cross of Wickson with Santa Rosa.

More than 280 different combinations of peach varieties have been produced as a result of this breeding work at Palo Alto.

### A PROMISING NEW PEAR

The Waite pear, named for our colleague Dr. M. B. Waite, retired, but very much on the active list still, continues to attract favorable notice. This pear, highly blight-resistant, was developed in connection with our early breeding work.

Hot, humid summers throughout most fruit-producing areas make fire blight a serious problem in growing pears. That is the reason most of the high-quality dessert pears are grown in the Western States, where the weather is drier and blight is not so serious. Fruit tree breeders have long sought for a high quality pear that would stand up well under blight conditions.

The new Waite pear has excellent cooking and canning qualities, and in dessert quality is far ahead of the Kieffer and Pineapple pears. It is nearly as large as the Bartlett and is almost free of the grit cells that characterize the Kieffer. It is a little more acid than the Bartlett and ripens about the same time as the Kieffer. Yields have been consistently high. The tree appears to be well adapted to areas south of New York and may prove of value as far west as Kansas. Its cold hardiness has not yet been determined, nor is it known whether it will grow well south of the apple belt. Experimental plantings have been made in Georgia and central Mississippi. Some commercial nurseries are already advertising it.

## NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"We estimate our crop prospects at Philema as not over one-fourth of that of last year, and it may be even less," he writes from the U. S. Pecan Field Station and Laboratory on May 11th. "Much of the pistillate bloom is to be found only in the tops of the trees.

"Pistillate flowers have become receptive during the week on most varieties although on both Success and Desirable this stage will be delayed a few days."

He had written May 4th: "Based on further reports and personal observations our previous estimate of the conditions of blossoming throughout Georgia will have to be modified somewhat. Our report of last week is correct for that portion of Georgia south of an in the immediate vicinity of Albany, but for that north of Albany blossoming is generally somewhat better.

"In some orchards blossoming is as heavy as could be desired while in other orchards it is good but could be better. In general, the greatest percentage of shoots blossoming is found in those orchards that have received the best care but which had only a light to moderate crop in 1939. Blossoming conditions are similar on all varieties observed."

F. N. Dodge, Shreveport (Robson), La.

"In the past seasons differences in the color and size of the foliage of the trees in the Bermuda and cultivated plots were not noticeable until late in the summer. However, each year the differences have shown up earlier until this year they could be seen almost from the first breaking of bud scales. Now that the pistillate blossoms can be easily seen it is apparant that the yields of nuts from the Bermuda trees will not average more than a pound or two per tree, while the cultivated trees could easily average more than 30 pounds per tree.

"By closely following the development of the pistillate flowers this year it has been possible to see that bordeaux spraying, grafting, and Bermuda sod have affected the time of maturity of the flowers."

Paul W. Miller, Corvallis, Oreg.

"There is every indication that the walnut crop in Oregon will be light again this year, as a relatively large percentage of the young shoots do not contain pistillate flowers and there is an abnormally large number of dead twigs in the trees."

## NUT INVESTIGATIONS

John H. Painter, Cairo, Ga. (Tung investigations)

"In the case of our 'selfed' blossoms where the pollination was done by hand, we have a very good set," he reports May 4th. "The set is also very satisfactory in the case of all the crosses. In the cases where the selfing was supposed to have taken place of its own accord, within a paper bag, we got practically no set. We attribute this lack of set to the fact that the paper bags used were too small to permit sufficient movement within to effect pollination.

"We, at this station, are convinced as the direct result of our tests that wind pollination is responsible for a very negligible, if any amount of set. In order to test this, a large number of female blossoms were bagged prior to their opening. After they had opened, the bag over each flower was removed and the female blossom, in its receptive condition, was exposed to the air for a period of at least a minute, which we felt was equivalent to the length of time our blossoms used for crossing were exposed to the open air. The bag was then put back and was not again removed until all blossoms had dropped on the surrounding trees.

"In not one case did we obtain a set, following this practice. In the case of our crosses, we were extremely careful about this exposure to the open air, and we shielded the female blossom with our hand and turned the blossom down to eliminate any chance of stray pollen blowing in. Since no set was secured in the cases where we purposely left the blossom open for any chance wind pollination, we feel sure that the fruits resulting from our crosses and 'hand selfs' were under complete control...

"Female blossoms left exposed under the tents erected, failed to set fruit in any case. It appears to us, therefore, that in the future such a tent would be all that is necessary for breeding purposes, provided it does not blow down, as did one of ours and some at Bogalusa. Tung pollen is relatively heavy which in itself tends to make wind pollination less possible. The fact that a high percentage of set has been noticed on the 25 trees that were marked at this station as all female trees is ample proof that cross pollination is common."

Felix S. Lagassé, Gainesville, Fla.

"Another demonstration of the great susceptibility of tung trees to sulphur, in this case the montana grafted on fordii at the Orlando station, was called to our attention by Dr. Traub," he writes May 18th. "A citrus tree approximately 50 feet distant from the montana tree was sprayed with sulphur spray. Enough sulphur was apparently carried by the wind onto the montana tree to cause it to lose 75 percent of its foliage.

## NUT INVESTIGATIONS

Ernest Angelo, Bogalusa, La. (Tung investigations)

"Many tung trees are blooming late in various orchards throughout this area," he reports May 11th. "Trees in all stages of flowering from those bearing fruits 1 inch in diameter to those in which the original flower buds have not yet emerged from the terminal may be found at this time. A number of these trees have been marked and located for future observation and study. It may be that the cold last winter is responsible in many cases for this delayed blooming..."

He had written May 4th: "Twenty-tree late blooming trees have been located in various orchards and marked for further study. In many cases these trees are blooming five weeks later than the earliest trees in the same orchard. The trees appear normal in all respects. An occasional tree was found to have one main branch carrying fruits one-half inch in diameter, another branch in full bloom and on the remainder of the tree the individual flowers had not yet opened. This is a peculiar behavior and we have no explanation for it unless winter injury may be responsible..."

"Fruits developed from hand pollinated flowers were collected for embryological studies. Studies of the vascular system fruits by vital staining have also been conducted in connection with studies of the materials prepared by the paraffin method.

"Data have been collected from the trees in the cold treatment experiment and are being analyzed statistically.

"Cold treatment of the young fruits indicates that as the fruit increases in age there is a slight loss of hardiness."

C. E. Schuster, Corvallis, Oreg.

"On the whole, for fruits this is an early spring, but English walnuts refuse apparently to respond like other fruits do," he writes May 4th.

"The blooming dates of the English walnut will not be any earlier particularly than in any other average-to-early season. Black walnuts are blooming much earlier. Varieties that are usually blooming after the English walnuts are well in bloom or through and the English walnuts alongside of them are yet to show more than a few pistils in the red tip stage. The Franquettes are shedding pollen and dropping catkins quite rapidly, but the pistillate flowers are very slow in developing along with the foliage. It actually looks like a modification of late foliation."

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### BETTER POTATO SEED

Science Digest for June, 1940, speaks quite enthusiastically of the work of Dr. H. A. Jones and his associates in connection with the production of superior potato seed.

"Producing true seed from a potato plant is the chief means of breeding new varieties," it says, as quoted in our Daily Digest. "With potatoes each seed represents a potential new variety. Unfortunately, the potato plant seldom produces seed in the field outside of a few favored areas, chiefly northern portions of Minnesota, Wisconsin, Maine, and the Colorado highlands. Three years ago Dr. H. A. Jones, in charge of potato work in the Federal Bureau of Plant Industry, set out to make a greenhouse 'climate' similar to that of northern Maine and upland Colorado. At the United States Horticultural Station, Beltsville, Md., and at the Potato Field Station, Greeley, Colo., the artificial 'climate' has produced larger and more uniform seed crops than under good field conditions similar to those existing in Maine and California."

### NEW TYPE OF SEED FLAT

"A new type of seed flat designed for use in the home, the cold frame, the hot house, out-of-doors, or for purposes of research in the laboratory, has recently been introduced by a seed company," says the Scientific American for June, 1940. "Measuring 12 by 14 by 3 inches, it is made of rust-resisting metal and employs an entirely new method of watering which allows for sub-irrigation without any messy leakage of soil or disturbance of seed or seedlings...An inner plate having widened openings at each end and perforations in the corrugations in the bottom, permits water to be poured in and seep up through the perforations right to the surface of the soil...Then a screw plug at the bottom of the flat is withdrawn so that any excess water may be removed. Further watering is not necessary for a week or ten days..."

### ADMINISTRATIVE NOTE

Payments for Metered Charges We are having some inquiries about payments for metered charges, so we'll quote from the News Letter of July 1, 1939, page 150:

"Hereafter, in making payments for commodities or services the quantity of which is determined by metered readings, such as gas, electricity, water, steam and the like, and for telephone service, where the period covered by the charge begins in one fiscal year or allotment period and ends in another, the entire amount of the payment may be regarded as a charge against the appropriation or allotment current at the end of such period."

## U. S. HORTICULTURAL STATION, MERIDIAN, MISS.

Geo. P. Hoffmann (Vegetable Crop Investigations)

"Work this week had to do with asparagus, tomatoes and sweet-potatoes," he writes May 4th. "Asparagus cutting is yielding 'grass' excellent in quantity and quality. Treatment 6 (spring and fall cut) is giving shy yields with a large percentage of 'grass' grading as small to very small..."

"With the exception of two varieties and selections, we now have enough sweetpotato plants of the varieties and selections included in the 'Big 49' test to plant at least two blocks of the four to be planted. This planting will go to the field during the coming week. The Triumph variety is sprouting slowly but the plants are good and it is expected now soon that the blocks to be set with Triumph and Porto Rico can go to the field."

## ADMINISTRATIVE NOTES

Employment under  
Letters of Auth-  
orization.

We are again reminded that employment under letters of authorization MUST be restricted to temporary and intermittent service. Consideration is now being given to restricting the length of time permitted under letter of authorization employment, particularly where the present limitations are not carefully observed.

As soon as it is determined that the services of an employee working under letter of authorization authority will be needed with any degree of regularity or frequency, a request should be made for his appointment. An appointment may be made on a rate-per-hour basis, by the day, or by the month. Such appointments, of course, may be terminated at any time desired.

Some of our field men are evidently under the impression that employment under letters of authorization should be taken advantage of whenever possible, and that appointments are to be requested only after the limit of authorization employment has been reached. This is not the idea back of the authority given by the Department of employment under letter of authorization. The real purpose of such authority is to permit employment under emergency or intermittent conditions, at times when it would be impracticable to obtain formal appointment because of lack of time, short period of service required, etc.

In this connection, it may be well to point out that a person may not be employed 30 days as a skilled laborer and 90 days as an unskilled laborer--a total of 120 days during a year. The latest ruling on this point is that if a man performs 30 days service as a skilled laborer he may work only 60 days as an unskilled laborer--a total of 90 days. This applies to all work - whether in our Division or some other Division.

## ADMINISTRATIVE NOTES

Rush Slips The attention of all employees is called to the following paragraphs quoted from Bureau of Plant Industry Memorandum No. 1101 of May 15, 1940, regarding the increasing number of rush requests being received:

"It would be very helpful to us if we could reduce the number of rush papers that come on their way through the Bureau. It is of course appreciated that now and then there is an occasion where some matter could not have been foreseen and special consideration is necessary. In many cases, however, it is obvious that it has been known for some time that a particular action would be taken, but necessary papers have not been started on their way. We have such a high percentage of rushes from some Divisions as to practically nullify the value of the rush slip for those Divisions. While we are glad to give special consideration to any case that may require it, we would appreciate your cooperation in allowing us more time for the orderly movement of business papers through Bureau channels.

"It is recognized that at times there may be delays. On the other hand, it is our feeling that on the whole most of our business matters move through Bureau channels expeditiously. If there are specific problems that appear to require an unreasonable amount of time, I would appreciate their being called to my attention..."

We are often called upon to rush letters of authorization, transportation requests, requests for advance of funds, tax exemption certificates for immediate use, etc., where it seems that with a little more consideration on the part the employee concerned they could have been requested several days in advance of their need. To obtain these things on one or even two days' notice makes it necessary to send a special messenger in to the Bureau, and follow the papers through to completion.

Wherever possible requests for travel authorizations should reach our Business Office at least a week in advance of the date required. Since these are drawn "effective date designated or as soon thereafter as practicable" the duration of the letter of authorization is figured from the time travel actually begins.

Please check over your supply of tax exemption certificates and transportation requests and put in your application for replenishment of these as soon as it is noted that the supply is getting low.

As pointed out in previous memoranda, rush slips or other identification should be attached to all vouchers bearing discount, as we are expected to forward such papers without delay.

The cooperation of all concerned in this connection will be very much appreciated.

Vol. 12 No. 11

June 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE



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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y   N E W S   L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Vol. XII

U. S. Horticultural Station, Beltsville, Md.

No. 12

June 15, 1940

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Potato  
Breeders'  
Conference

Reports coming in regarding the National Potato Breeders' conference at University, La. and Fairhope, Ala. during April leave no doubt concerning the success of the meeting, which was attended by 39 people representing 11 States and Cuba. These conferences are proving to be of the greatest importance in providing an opportunity for informal exchange of ideas among the workers in this field. They are already planning to have a round-table discussion of breeding methods and problems at the next meeting.

The morning of the first day of the conference was spent indoors, the group being welcomed by Dean J. G. Lee of the College of Agriculture, Louisiana State University. He pointed out some of the problems faced by the Louisiana growers, and emphasized the fact that the investigator should not lose sight of the application of his researches to the actual needs of the farmer.

Dr. Julian C. Miller of the Louisiana Agricultural Experiment Station, discussed the Louisiana potato breeding program up to the inception of the Federal breeding project for the Southern States. He stated that he had been making crosses between most of the commercial varieties in order to find combinations that would yield high numbers of desirable individuals and resistance to certain diseases.

Dr. E. L. LeClerc of our Division, stationed at University, La., discussed potato production and breeding in the Southern States, outlining the Federal potato breeding program for the South. It was

## POTATO INVESTIGATIONS

pointed out that work would be carried on for resistance to scab, mild and rugose mosaics, and early blight; and since the program is regional much emphasis will be placed on some of the fundamental problems of potato breeding and pathology in their application to southern conditions. For example, a study will be made of physiologic races of Alternaria solani as they concern the entire South in relation to resistance or susceptibility of varieties. Susceptibility of wild hosts will also be investigated in a study to determine the course of early infection in the Spring.

The first afternoon was spent in the field inspecting the potato work being done at University, La. During the afternoon Dr. F. A. Krantz of the Minnesota Agricultural Experiment Station discussed the phenotypes of most of the color genes and some of their interactions. Some of his material had been planted at Baton Rouge and could be examined by those interested. He plans to use these color genes in the study of quantitative inheritance, such as scab resistance. Dr. LeClerc discussed a field exhibit of commonly used breeding parents, pointing out such characteristics as disease resistance, color factors, yield, and earliness. In another set of plots Dr. Miller pointed out the better growth produced by northern grown seed as compared with southern grown stock.

The potato work being conducted in cooperation with the Department of Horticulture, Southwestern Louisiana Institute, Lafayette, La. was inspected and considerable interest shown in the Federal tests dealing with the effect of different amounts of leafroll and spindle tuber on yield and the effect of time of roguing on yield. A round-table discussion was held at Lafayette. Among those who participated in the discussion were Dr. J. R. Livermore of Cornell University; Dr. F. A. Krantz of Minnesota; Dr. G. H. Rieman of the University of Wisconsin agricultural experiment station (An extensive breeding and testing program is in progress to develop varieties resistant to scab under Wisconsin conditions); Dr. H. O. Werner of the Nebraska station; Mr. C. H. Metzger of the Colorado experiment station; Mr. J. J. Bird from the University of Tennessee; Dr. K. C. Westover from the West Virginia experiment station; and Mr. Reiner Bonde from the Maine station.

At Houma, La., the conference examined the field work dealing with scab resistance, adaptation plots, variety test, and the effect of various sizes and numbers of skips on yield. This last named test and the one on roguing as influencing yield at Lafayette incited considerable interest. These are very important factors in conducting yield tests and deserve more investigation.

Rain interfered with the plan to inspect the potato work at the Alabama Gulf Coast Experiment Station, Fairhope, Ala.

## ANNUAL PICNIC

The seventh annual picnic of the Division was held June 1 at and around the "Log Cabin" in the woods section of the U. S. Horticultural Station, Beltsville, Md. Threatening clouds and a brief downpour early in the afternoon failed to dampen the enthusiasm of the approximately 250 persons attending. This year the Divisions of Nematology, Drug and Related Plants, and Experimental Greenhouse, recently moved from Washington, D. C. to the station, helped swell the attendance.

The hospitality committee headed by Mrs. May Jenkins, greeted all of the picnickers as they arrived and made identification easy by tagging each one with a card bearing his name--or her name as the case might be--in large letters. Mrs. Jenkins, you may recall, is the Chautauqua spelling champion, and probably the only member of the staff who could be trusted with the task of spelling all these names correctly on the cards!

The softball game between members of the scientific staff and the Business Office force seemed to attract more attention than any other feature on the men's program. The scientific staff won, 5 to 0. It was again a case of the "power behind the thrown," for Dr. John R. Magness pitched his fourth consecutive victory in the series--and went the full distance without showing any signs of weakness. In addition, he proved dynamite with a bat in his hand, driving out one hit with the bases full and two out that practically settled the issue. A possible alibi is available to the Business Office outfit in that "Scrib" Ramsburg played a whale of a game, both in the field and at the bat, for the scientific staff--when, legally, he should have been with the Business Office lineup.

Bob Linehan, who pitched for the Business Office team, really deserved a better fate, since all five runs scored against him were unearned. However, baseball players count their friends by the score! Incidentally, Walter Roney played a brilliant game at first base for the Business Office, catching thrown balls with the same ease he displays in nabbing errors in your vouchers.

According to our reporter, one of the girls watching the game turned to her husband and inquired: "What was all that clapping about?" He looked at her in dismay. "Gosh, Winnie," he said, "you don't mean to tell me you missed that play! Why, McKay robbed Linehan of a sure home-run. Didn't you see him catch that fly away out there near the trees?" The girl laughed merrily. "You can't tease me," she insisted. "You couldn't even see a fly that far away."

Mr. D. F. Fisher, Chairman of the Men's Games Committee, did an excellent job and even contributed a son to the scientific staff team. Young Fisher displayed hereditary traits in the skilful management of handling and transportation problems incidental to placing the Business Office team in cold storage until next June.

The Business Office obtained a sort of revenge by winning the relay race from the scientific staff team.

The childrens' games committee, headed by Dr. and Mrs. Magness, arranged for boat rides for the younger children and various games for all. Mrs. Marian Harvey of the Business Office, cleverly disguised as a clown, distributed balloons to all and soon had the grounds bright with their varying colors. While the youngsters were jumping rope, Mrs. Haller and Mrs. Beek stopped by--and proceeded to give them a striking demonstration of how the thing should be done!

Dr. J. B. S. Norton of the University of Maryland, assisted by Mr. C. A. Reed of our staff (we get a lot of mileage out of that C.A.R.!) handled the interesting contest for the Auchter cup, presented each year to the member of the family of a station employee, under 21 years of age (the child, not the employee!) who is able to identify the greatest number of plants and trees in the station grounds during a tour. This is always a major feature of the annual picnic, the older folks displaying as much enthusiasm as the young competitors.

The winner this year was Sarah Culpepper, daughter of our colleague C. W. Culpepper who named 51 plants correctly. In making the presentation of the cup, Dr. Auchter paid a high compliment to the contestants, declaring that their participation showed a genuine interest in plants--the very thing the contest was designed to stimulate. "Knowing trees and plants," he told them, "adds greatly to the pleasure of everyone who enjoys being out of doors." He took occasion, also, to express the appreciation of all of us to Dr. J. B. S. Norton for the time and patience he has contributed to these contests year after year. Dr. Norton, of course, is not only a State and national, but also an international authority on many botanical matters. The tour requires something over two hours, as a rule, fewer than 100 plants being visited.

Dr. and Mrs. Brierley, heading the women's games committee, reported that 38 took part in the series of contests arranged for the afternoon. Prizes were awarded to the three competitors who had the greatest total of points for all five contests--archery, darts, quoits, basketball and throwing the rolling pin.

It was a tired but gay crowd that sat down late in the afternoon--twilight to you--to enjoy the ample picnic lunches. There was also lemonade, coffee and ice cream for all; with Messrs. W. R. and J. H. Beattie brewing the coffee over an open fire. (Note. Only the superlatively high class Beltsville water, checked and approved by Vic Lumsden, was used for the lemonade and coffee.)

The whole affair was run off so smoothly and satisfactorily that it must have been highly gratifying to Dr. Auchter, who inaugurated the picnics and who believes that such affairs do much in building up an esprit de corps and promoting friendly cooperation and team worth throughout the year.

## NUT INVESTIGATIONS

John H. Painter, Cairo, Ga.

(Tung investigations)

"Some lepidopterous larvae were found infesting the fruit in the Lamont orchard," he reports May 25th.

"These larvae seem to be some species of *Heliothis*. The extent of the infestation is less than 1 percent, but is quite widespread throughout the entire 600 acres. The larvae attacks the fruit while it is young and tender and goes immediately into the developing kernel and completely devours it. The tung fruit seems to have no toxic qualities, as far as this larva is concerned, since no dead larvae were found anywhere around.

"The species *H. obsoleta*, now reconized as *H. armigera*, and another species, *H. virescens*, are both prevalent in this section. The latter species is the one that does the principal damage to tobacco, while the former is more commonly associated with cotton, corn and tomatoes. The one thing to bear in mind, in respect to such insect activity, is the fact that very often a new host will be taken on by an old pest and the damage done to this newly acquired host plant may assume large proportions before it is noticed or checked.

"Stating it briefly, it is not assuming too much to venture the opinion that should *Heliothis* adopt tung as a host it could cause us plenty of trouble. Samples of these larvae and the fruits so injured have been forwarded to the Washington office for transmittal to the Bureau of Entomology and Plant Quarantine."

He had written May 18th: "One interesting thing that is showing up at this station is the result of our test on 'length of time the female flower is receptive.' We find that some set has been obtained from flowers that were hand selfed from 1 day before the corolla opened to 9 days after the corolla had opened. The test indicates that the stigma is receptive from a day before opening until at least 7 days after the opening of the corolla..."

"An examination of the cleft grafts and slip-bark grafts made on branches of matured trees, gave completely negative results. Out of a considerable number, none survived.

"Slip-bark grafts put in the main trunk of the trees, fastened with a small nail, gave a good 'take,' when terminal shoots were used. This method, of course, would be of no practical value, but the fact that some of the grafts are fruiting may mean that for experimental use such a system could be used. No damage is done to the tree so used."

## NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla.

"Counts have been completed of the percentage of fruit set where crosses were made," he writes May 25th.

"The highest percentage set secured with fordii on fordii was 51.9 percent with day-old pollen applied to stigmas that had been bagged three days. This, of course, leaves much to be desired, but as a result of germination studies with pollen this season, and the results obtained in the field at the three laboratories, we are confident that much better results will be obtained another season. The age of the pollen when it was applied was recorded and it is very evident from the data obtained that three days is the longest it can be kept under average air temperatures and existing humidity.

"In the case of montana by fordii, practically a 100 percent set was secured on the female tree at the station grounds. None of a small number of fordii by montana crosses set fruit."

John R. Cole, Albany, Ga.

Writing from the U. S. Pecan Disease Field Laboratory on June 1, he says: "An inspection of the chestnut trees at Philema indicates that pollination is just beginning. They are blooming about thirty days later than they were last year. However, prospects are good for a bumper crop of nuts.

"The black aphid infestation is increasing rapidly in some localities, especially in the vicinity of Dawson. Growers are incorporating nicotine sulphate in their second bordeaux mixture spray, which is unusually early to spray for this insect. This indicates also that the recent cold winter, which was the coldest in about forty years, did very little injury to the eggs of this insect.

"Intermittent showers fell during the week, with a total of .7 of an inch of rain having been recorded at the Taylor orchard. These showers were very beneficial, but were insufficient to break the extensive May drought."

He had written May 25th: "A rainfall measuring .35 of an inch was recorded at the Taylor orchard on the 24th. This was the first rain, of any consequence, to be recorded during the month of May. We are now in the midst of a severe drought and pecans, as well as other crops, are now reaching a critical stage because of this drought."

## U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

George P. Hoffman (Vegetable crop investigations)

"Farmers in this section are getting pretty well caught up with their cultural work but much of the cotton is having to be replanted," he writes May 25th. "Corn is late and garden crops are generally backward and less promising than should be for this time of the year. The strawberry season has about closed, reports from which are more favorable than was formerly anticipated--short crop followed by more satisfactory prices.

"Really," he continues, wearing his rose glasses, "the Beltsville station has nothing on our station here because after all we are beginning to feel that we are actually living in town--black-topping of our road progressing in a very satisfactory manner and bus service having been initiated here by the Meridian City Lines las week-end!

"Both quantity and quality of asparagus have been reduced because of weather conditions and open or loose spears continue to be greater in number than desired. There is little question in my mind but that asparagus should occupy a place in the agricultural program of this region, as our yields are economically satisfactory and apparently the quality of the 'grass' is equal to that elsewhere grown.

"About half of our sweetpotatoes have been set, with all plots laid out and made ready for receiving the plants as rapidly as these are available. Never before in the history of sweetpotato growing at our station here have we had such unfavorable conditions with respect to dry soil and the absence of rain as we had during the time of setting our plots this year. However, the plants were watered in and a check on stand count indicates that plant loss is practically negligible. Consequently, this well illustrates the correctness of the rule of the old growers in this section--"When plants are ready, set, regardless of weather; if dry, water them in." They all get a uniform start, with an equal chance.

"A trip was made to the Crystal Springs section for the purpose of observing and pruning the tomato cultural and variety test at the Touchstone, Green, and Truck Crops farms, respectively. Tomatoes generally were backward with the plants in many fields being yet too small to stake. Cabbage movement was slowing up to some extent, the peak of the season having passed, with the price being rather nervous--\$8 to \$15 per ton. The pea season was observed as having been short, unsatisfactory, and generally unprofitable, with the price closing at around 65 cents per hamper. The few plantings of snap beans that survived the late or so-called spring freeze appeared rather promising but it is yet too early to forecast the outcome. Growers immediately around Crystal Springs are becoming a bit enthusiastic over cauliflower production, several acres having been planted this season, with prices ranging from 65 to 75 cents per dozen heads."

## U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

J. M. Lutz (Handling, transportation and storage investigations)

"The Irish potato crop that I am growing for storage studies is looking better now after the rains Wednesday and Thursday," he writes for the week ending May 25th. "It has had pretty tough sledding this year. The plants were frozen to the ground by the frost of April 13, and then they had a rather prolonged dry spell to come through in May. Although they still have some hot weather confronting them, it looks as if the field will produce ample potatoes for this work. Tomatoes in the Crystal Springs section will probably not start to move until at least June 5, and it will probably be June 10 before sizable quantities are shipped especially if they fulfill the maturity standard this year requiring an average of at least 10 percent of each lot showing a tinge of pink or red color before shipment, and the remainder fully mature. The tomato acreage is considerably below normal.

"Louisiana finally quit shipping strawberries on May 18th, with 2,365 cars. An additional 149 cars went by motor truck. Trucks did an appreciable business in Louisiana this year for the first time, despite an average railrate reduction of about \$35.00 per car. The Railway Express Agency is much concerned about this truck movement. They tell me that the Louisiana strawberry deal is the largest single express deal in the United States and naturally they hate to lose it. Trucks manage to get as fast or faster delivery than the Express Company. All the trucks I saw in Louisiana were refrigerated. Some of them were being precooled. I saw one truck being loaded for Toronto."

N. H. Loomis (Small fruit investigations).

Commenting on the strawberry harvest, he states that the Blake-more gave the highest yield of the named varieties tested. "Fairmore rated high among the shipping varieties and gave a crop of much more uniform size with fewer culls than Blakemore. The Klondike as usual gave a very low yield. If this variety were one of our unnamed seedling selections and not the commercial variety for this shipping district, it would have been discarded in our tests long ago!"

Atherton C. Gossard (Nut crop investigations)

"The recovery of the pecan varieties from winter injury is not in the same order as was the apparent early resistance," he reports May 25th. "Blake was the most severely injured of the varieties here, and Moneymaker the most severely injured of those in the main orchard. Joe Wright has been the slowest to recover of all our varieties; and Success the slowest in the main orchard....Buds have broken on 5 of the 15 tung trees that were severely injured by cold. Most of the growth is on the trunks or lower branches. New shoots have started growth well into the tops of the tree that is making the best recovery. On the uppermost of these new shoots is one lone blossom cluster!"



## DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"All the spray plots were examined May 15th. The spread of the scab fungus had been retarded by the comparatively dry weather. While it was possible to find scab lesions on the leaves and fruit of the non-sprayed check trees, nevertheless they were not nearly as prevalent as in 1939, audit seems likely that the 1940 season is going to be one comparatively scab-free. The first fruit lesions caused by the scab fungus found in the 1940 season were noted during the examination of the plots on May 15th.

"The bacterial spot disease likewise appears to have been checked by the dry weather after getting an early start, for an examination of our spray plots near Springdale showed very little spread of the disease.

"The 1940 strawberry market opened on May 10th at Springdale. Approximately 300 crates were shipped over the week end. The crop is small and the market opened with prices ranging from \$4.20 to \$5.00 per crate. Most of the early shipments consisted of the Blakomore variety.

"The final effect of the April frost is now becoming evident in many apple orchards. The Jonathan variety has "dropped" badly throughout the district; Winesap likewise now has only a very light crop. Golden Delicious, Stayman Winesap, Collins Red and Ben Davis do not appear to be seriously affected."

John H. Weinberger, Fort Valley, Ga.

"Two nurserymen from Tennessee were here last week to make arrangements for getting Yunnan budwood to establish their own source of nema-resistant seed. We are sending Yunnan budwood to a third Tennessee nursery also, this week. Growers here are anxious to buy trees on this stock but only a few are willing to pay the present price of about 25 cents per tree extra for them," he reports June 3d.

He had written May 27th: "Peach season has started, and several carloads will be shipped today, probably. The first basket was expressed on the 21st from an orchard about 15 miles south of Fort Valley. Usually the first peaches are harvested in orchards 10 or 15 miles north of here, but following a cold winter as this past one has been the more southerly orchards have the advantage. The fruit has good color and fair size, but is still Mayflower...Less than an inch of rain has fallen in the last five weeks and it has been necessary to irrigate some of the smaller trees to keep them growing rapidly."

## ADMINISTRATIVE NOTES

Weight and count of franked mail. The report on the weight and count of mail sent out under frank for the quarter ending June 30, 1940, must be in the office of the Chief of Bureau not later than July 10th. Please, therefore, mail your report to the Business Office promptly the last of June so that there may be no delay in the preparation of the Division's consolidated report.

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Leave A notice from the General Account Office points out that the existing Uniform Annual and Sick Leave Regulations, issued pursuant to the Annual and Sick Leave Acts of March 14, 1936, are for application, after March 1, 1940, only to the extent that their provisions are not inconsistent or incompatible with the provisions of the amendatory annual and sick leave act of March 2, 1940.

A temporary employee who is absent, after March 1, 1940, on annual or sick leave from Friday through Monday (both Friday and Monday being work days and 4 hours constituting a work day for Saturday) should be charged with 2 days' and 4 hours' annual or sick leave as the case may be. Only 4 hours are chargeable, instead of a full day, for a full day's absence on account of sickness on Saturday half-holidays, and proportionate charges on that basis are made for absences of less than the full work day, subject to a minimum charge of 2 hours for absences of "two hours or less" as required by the Uniform Sick Leave Regulations. A minimum charge of one-half day for absences on account of sickness on a regular work day (not Saturdays) is to be made.

If the 31st day of a month falling within a period of advanced leave is not a Sunday, holiday or non-work day, but would be required to be charged as annual leave, refund of one day's salary is required for that day the same as for any other day that is required to be charged to annual leave. Where the last day of February falling within a period of advanced annual leave is not a Sunday, holiday or non-work day, but is required by the statute to be charged to annual leave, only one day's salary is required to be refunded for leave without pay on that day--not on a basis of a 30- or 31-day month.

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Gasoline: We haven't yet received contracts for tank wagon deliveries of gasoline for the fiscal year beginning July 1, 1940.  
Tank-Wagon Deliveries It is suggested, therefore, that stations requiring such deliveries have their storage tanks filled toward the end of June to make certain having a supply in case the new contract schedule is delayed in reaching them.

## PERSONAL MENTION

The following field trips have been authorized for members of the Beltsville staff:

Dr. Geo. M. Darrow to Maryland, North Carolina, and Virginia, to inspect blueberry selections;

Dr. L. L. Harter to Virginia to investigate sweetpotato diseases;

Dr. Earl D. Mallison to conduct investigations on the transportation of sweet cherries, accompanying test trips from Wenatchee, Washington, to the eastern markets;

Dr. J. B. Demaree to Wisconsin, Minnesota, Washington, Oregon, California, Utah, and Wyoming, to study diseases of small fruits, consult with small fruit investigators, and become better acquainted with western fruit conditions;

Dr. J. S. Cooley to study peach root rot in Virginia and North Carolina.

Dr. J. C. Miller of University, Louisiana, made a trip to the U. S. Vegetable Breeding Laboratory at Charleston, S. C., to consult with staff members and other workers on vegetable breeding work in progress in southeastern United States.

Mr. J. R. Winston of the Handling, Transportation, and Storage Project at Orlando, Florida, is spending a short time in Washington and Beltsville consulting with Section Leaders and other staff members, and also compiling reports for publication.

While on a vacation trip to Washington recently, Mr. J. H. Painter of the U. S. Field Laboratory for Tung Investigations at Cairo, Georgia, spent a day with Section Leader Crane going over nutritional work on tung that is under way at Beltsville and discussing the research program for tung work.

Robert W. Howell also visited the Beltsville Station while enroute from Cheyenne to Ithaca, New York, where he will assume his duties as Junior Administrative Assistant at the U. S. Regional Plant, Soil, and Nutrition Laboratory. It is understood that Mr. Howell will be married in the early fall to Miss Betty Blair of Cheyenne.

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Summer Hours The following hours: 8:30 a.m. to 4:00 p.m. from Monday to Friday; and 8:30 a.m. to 12:30 p.m. Saturday, will be in effect from May 15 to September 30, inclusive, for employees of the Department in Washington, and at Beltsville. The hours were established on the basis of a vote by all employees. It means no change at the U. S. Horticultural Station, Beltsville, Md., for this is the regular schedule maintained throughout the year there.

Vol. 12 No. 12

June 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
July 1, 1940

No. 13

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Flowers-- In the vegetable world, a combination of the ornamental with  
and Fruits the useful does not appear to be desirable at all times--  
and certainly not in storage! A report by D. Victor Lumsden,  
R. C. Wright, T. M. Whiteman and J. Wise Byrnes, submitted in connection  
with one of the projects undertaken in cooperation with the Society of  
American Florists and Ornamental Horticulturists, indicates that fruit  
and flowers, for example, should not be stored together.

These investigators found that the life of carnations and other cut flowers may be definitely shortened by holding them in refrigerators in which apples or some other fruits are stored. This is brought about undoubtedly by ethylene (a constituent of illuminating gas) given off by the fruits as they ripen. It has long been known, of course, that the presence of ethylene sometimes produces marked changes in the growth processes of plants and flowers.

It is not known how extensively the practice is followed of placing both flowers and fruits in the same storage room, but it is no doubt done rather frequently when anniversaries such as Mother's Day stimulate the temporary cold storage of large quantities of cut flowers. Thus these studies seem likely to be of decided interest and of practical value to commercial flower handlers. Perhaps they may lead to the installation of equipment for freeing the air of detrimental gasses, if the cost is not prohibitive; or at least of so segregating flowers and fruits in storage as to avoid the adverse effects of storing them together in the same compartment.

## DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The additional moisture is of great benefit to the entire district, but has not been an unmixed blessing as the period of rainy weather was ushered in by a hail storm that did considerable damage to the fruit crops," he writes June 15th, announcing that the early summer drought had been broken by storms that started the evening of June 8th. "In our experimental blocks none of the apples were knocked from the trees but many show hail bruises. The epidermis of the fruit, however, was not punctured. At the University farm the cherry crop was severely damaged as the fruit was practically mature. Grape leaves were badly cut by the hail stones."

He had written June 8th: "The 'drops' from the various apple plots have been collected and examined. The figures from the non-sprayed plot showed only 7.1 percent of the fruit infected with scab. This is quite a contrast to the results obtained last year when the first collection of drops from the check plot showed 89.5 percent of the fruit infected with scab. The amount of scab on the drops from the various sprayed blocks of the 1940 experiment is almost insignificant and in no case does it amount to 1 percent of the drops collected to date."

Elmer Snyder, Fresno, Calif.

"Pollination in connection with grape breeding work was started at Fresno this season on May 6th and completed at the Oakville vineyard on May 24th, compared with April 27th to May 17th during the 1939 season," he writes May 29th.

"While this season is somewhat later than last year, it appears at this time to be about a week to 10 days early compared to our average data of previous records. This season over 10,250 blossoms were emasculated and pollinated in connection with the different crosses.

"Incidental to the pollination work, an apparent 'Gigas' (tetraploid) form of Ohanez was found on a normal Ohanex vine. Attention was first called to the shoot on account of its short stocky internodes and the decidedly larger than normal individual blossom buds on the inflorescence. On microscopic examination, the pollen grains were found to be slightly more than double the size of the normal pollen. The one cluster produced by the mutant (?) shoot was cross-pollinated with a seedless variety and the shoot labeled for future propagation.

"The seedlings resulting from 1939 crosses have been 'T'-budded into rootstocks in the vineyard in so far as stocks were available. The remainder of the seedlings have been repotted and will be grown in the lathhouse for future vineyard planting."

## DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"Studies are being conducted on the effect of irrigation water from wells and springs on the growth of fruit trees. Most of this work has been concentrated at the Cunning Ranch on Baker Flats. This year considerable chlorosis is evident in pear and apple trees. However, it is much more serious in Bartlett and Anjou pears. Flemish Beauty trees show very little chlorosis at this time although many of the Bartlett and Anjou trees are severely chlorotic. Dr. Lindner has been making a comprehensive analysis of the irrigation water from this ranch and he has found that it contains 370 p.p.m. of total solids. Of this, 218 p.p.m. are composed of carbonates. To be certain that this condition is due to lime-induced chlorosis iron substrate injections were made and within a week's time one of the trees do injected began to show green foliage. Nitrogen analysis of the leaves show chlorotic leaves to contain 1.88 percent nitrogen and the green leaves 1.72 percent nitrogen on a dry weight basis. This indicates that neither nitrogen deficiency or salt accumulation other than carbonates is responsible for the condition of the trees. The apple trees so far have not shown the severe symptoms that are apparent with Anjou and Bartlett trees. However, they failed to set a normal crop this year which we have observed in years past to be one of the indications of lowered vitality due to high carbonate content of the soil...

"Our nitrogen metabolism studies are showing some interesting trends. It has been observed that leaves on a heavy set tree are generally darker in color than the leaves from the light set or "off year" tree. Also in trees setting a heavy crop, the secondary leaves from fruiting spurs are usually lighter in color than the primary leaves that first appear in the spring growth. We found by leaf analysis this year that the dark green leaves on 'on-year' trees contained 2.75 percent nitrogen as compared with the light colored 'off-year' trees with 1.69 percent. The primary leaves on bearing spurs contained 3.06 percent nitrogen as contrasted with 2.29 percent for the secondary growth leaves. We interpret this as evidence that much, if not all, of the growth in the spring is due to reserve nitrogen already in the tree, rather than any nitrogen taken up from the soil at that period. Our results from the low nitrogen trees offer further evidence along these lines. We have a small block of Delicious trees about 12 feet in height that have made practically no terminal growth during the past three years. These trees are so lacking in vitality that very few fruit buds are initiated and what blossoms appear are too weak to set fruits. The cover crop in this orchard is composed primarily of quack grass. In fact, the soil is so depleted in nitrogen that the quack grass has a difficult time to survive. Analyses of the leaves for potassium and phosphorus showed that they were not deficient in these materials. In fact they were higher in both substances than our high

## DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley (continued)

nitrogen check trees. This year nitrogen was applied in the form of ammonium sulphate 46 days before full bloom at the rate of 3, 6, 15 and 25 pounds per tree. Within two weeks after this application we had several very heavy soaking rains. The quack grass responded immediately to these applications, especially on the 6, 15 and 25-pound trees. However, no evidence of upward movement of nitrogen, either visual or chemical, was noted until 30 days after full bloom, and then only on the trees receiving 15 and 25 pounds of ammonium sulphate. These trees had already finished growth but 30 days from full bloom they started to push out into vegetative elongation. Such was not the case, however, with the trees receiving 3 and 6 pounds of sulphate. The quack grass under the heavily fertilized trees made a tremendous growth, in fact so heavy was this growth that after a shower the plants lodged badly. From chemical analysis of the quack grass it was estimated that in the area in which the fertilizer was applied approximately 6 pounds of ammonium sulphate was taken up by the quack grass. That is borne out by the external appearance and the chemical analysis of the 6-pound trees. No evidence of nitrogen uptake in the 6-pound trees can be detected at the present time, either visually or chemically."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station for the May 16-31 period he said: "We have just closed one of the shortest, latest and driest strawberry seasons we have had for some years. The quality of the berries has been unusually good throughout and prices have held up better than in most years.

"We made our first picking April 29th and our last on May 23d. Last year we made our first picking April 10th and the last on June 9th. Rainfall during this year's picking season was very light and we had very little damage from fruit rots and leaf spot damage. We had only 1.12 inches of rainfall from April 29 to May 23. The absence of leaf spot injury was reflected in good condition of caps and a minimum of black-seed trouble. The damage from leaf spot and scorch has been very small....

"The blueberry picking season got under way in late May. Mr. Huntington picked 10 crates on May 25th. May 31st second pickings on Cabot were being made at Crabbe's. Mr. G. Harrison at Ivanhoe was making his first picking May 31st. There was an unusually heavy set of fruit and indications that there would be an excellent crop. The injury from frost was slight and the damage from mites small. At Crabbe's on May 31st severe cracking of fruit due to rain the day previous was noticed. It had been very dry for the month and the cracking was brought on by showers on May 30th, when there was a rainfall of 2.33 inches."



## DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"Cranberry vines have started growth and it is now possible to appraise the condition of the bogs," he reports May 31st. "Bogs that were not flooded until March show very serious injury, amounting in some cases to almost complete killing of the tops. At least one grower has mowed part of his acreage as close as possible to the ground and has removed the vines. Some injury is apparent on most bogs that were flooded during the latter part of January. Here many of the terminal buds were injured and many of the old leaves have dropped since the water was drawn. There are a few bogs that were flooded before the middle of December that now show partial defoliation and decided lack of vigor; I have not yet been able to determine with certainty the cause of this injury; in some cases, at least, the bogs or parts of bogs were in very poor shape last year as a result of the frequent floods of 1938, but it is apparent that other factors are involved in some locations.

"The weather from the 21st to the 28th was cool, continuously cloudy, and frequently drizzly, with a total of 2 inches of rain. These were extremely bad conditions for blueberry pollination and will greatly reduce the crop of certain varieties. Cabot, Rancocas and June had set most of their fruit before the bad weather began. The peak of bloom of Pioneer, however, came during this bad week, and it appears that most of the blossoms in some fields were not pollinated. The fate of the Rubel in the Pemberton District is still in doubt but near the coast the bloom was late enough so that there will probably be a fair set of fruit. Jersey has not yet quite finished blooming.

"The long spell of wet weather resulted in the heavy destruction of bloom in some fields by Botrytis. Some new infections by Phomopsis vaccinii are taking place on new leaves and tips of blueberries, and we have found places where the fungus is apparently working very rapidly down the pith of canes from blackened tips. This fungus got a vigorous start in many fields during the wet season of 1938, and has not yet been brought under control. The most susceptible varieties in one field are being sprayed with bordeaux to see whether new infections can be prevented. There has been a very light infection of laterals with the Sclerotinia fungus, even though there were large numbers of overwintering mummies in most fields. Practically all growers took measures to remove or destroy these mummies before spore production began. The fact that a large proportion of the ascospores had discharged before the onset of wet weather undoubtedly contributed to the light infection. I expect that there will be a light production of mummies during the present season. As reported earlier, a thorough spray with dormant-strength lime-sulphur and arsenate of lead largely prevented the development of apothecia. The same effect lasting over a longer period was secured by dusting with calcium cyanamid; up to the present time the bushes dusted with as much as 300 pounds of this material per acre have not shown any will effects."

## DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

"According to reports from the Department of Horticulture of the State Station, the prospective apple crop for Missouri in 1940 is 60 percent of normal," he writes June 7th. "The crop of Golden Delicious and King David will be very light throughout the state, while Winesap, Delicious, Rome Beauty, York Imperial and Willowtwig promise a much heavier crop than usual. The spring frost seriously damaged the cherry crop. There will be a full crop of pears. A moderate to heavy crop of peaches is in prospect in south central and southeast Missouri."

J. R. Kienholz, Hood River, Oreg.

"Several trips have been made to The Dalles to examine the peach and cherry orchards," he writes in his report for May. "As a whole, it appears that most of their troubles are due to drought conditions. One 8-year-old peach block, however, had me puzzled. Scattered limbs or whole trees were dying, and portions of these showed narrow, yellowed leaves which occasionally showed some variegation. The new growth from around pruning cuts especially showed a rosette type of growth with very narrow, yellowed leaves. While this condition is probably an expression of drought conditions, there is considerable similarity to the symptoms described for rosette or yellows..."

"There is no lack of variety in the problems of this territory," he continues. "From the drought conditions experienced at The Dalles where slightly over 6 inches of rain fell all of last year, a wetter cycle seems to be occurring at Cascade Locks where over 60 inches of rain were recorded last year. An average difference of over 62 inches of precipitation occurs within this 40 miles of territory. I was called upon to diagnose a new cherry disease in the wet area. Much to my surprise, a severe case of the *Coccomyces* leaf spot was found. Every tree in a 5-acre planting was severely infected and about 5 percent of the leaves on many trees were yellowed and falling. Fruit pedicel infection was severe and it is doubtful whether much marketable fruit can be salvaged. While the disease was too severe to properly evaluate varietal susceptibility, it appeared that the Black Republican and seedling cherries were most susceptible and Lambert less so. Considerable fruit spotting occurred on seedlings and occasionally on black Republican."

(Editorial Note.--J. R. qualifies as a prophet, also, a postscript to his report saying: "We are looking for the notice stating Dr. Magness knocked another homerun at the Beltsville picnic!" He will find it on page 138 of the June 15th News Letter! JAF)

## NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Brown leaf scorch, a non-parasitic disorder of Persian walnuts, is beginning to show up in certain orchards in western Oregon," he writes June 1.

"A study of the soil from an opened trench in certain of these orchards revealed the fact that adverse conditons for growth prevail from the third foot on down. In most cases, the subsoil was found to be very heavy, forming a sticky, putty-like mass that is undoubtledly largely impermeable to air and water. Comparatively few roots were present in the excavated area below the third foot level.

"A number of grafted walnut trees are dying in certain hill orchards near Silverton, Oreg. A study was made of the crown and root systems of several affected trees, but no parasitic disease was found. It would appear from the results of studies carried on to date that adverse soil conditions cumulative over a period of several consecutive unfavorable growing seasons are in all likelihood responsible for the death of the trees in question.

"The latter part of the week was spent largely in taking a number of current commercial cost records of spraying walnuts for the control of blight. These studies were carried on in cooperation with the Farm Management Department of Oregon State College. Seven current records have been obtained to date. The current cost of spraying walnuts for the control of blight ranged from 25 cents to 45 cents per tree, which is approximately the same cost as was obtained from records taken last year."

Ralph H. Sharpe, Cairo, Ga. (Tung investigations)

"The results of using different methods of budding and grafting of tung seedlings may be reported on in a preliminary way at this time," he writes from the U. S. Field Laboratory for Tung Investigations on June 8th.

"It is too soon to know what grade of trees may result from the different methods, but all scions that were inserted, in this test, have now begun to grow or have completely dried out. Altogether, four sources of scion wood and nine rootstocks were used, with no significant differences to be noted in the percent 'takes'. Using 108 plants of each of the cleft graft, chip bud, bark graft, and patch bud method, it was found that the former two methods gave about 33 percent 'take' while with the bark graft and patch bud method 80 percent living scions were obtained."

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"When we have the complete data for the season, much will be learned about different methods of budding and other details of the work," he comments in his report of June 8th. "At present it appears as if patch buds have given somewhat better results than T-buds. There is a good deal of difference between buds from different clones. Our present data covers only seven varieties but it is of interest to note that the two which gave the poorest results this year were also low in 1939, and that the two that gave the best results this year were among those that gave high percentages last season. However, one clone that gave only mediocre results this season was one of the best last year.

"Data have also now been obtained on some 1300 of the trees that were budded in the nursery last September. Although we do not consider it a desirable practice, in order to avoid setting seedling trees in our soil management plots, it was necessary to transplant all of these fall-budded trees while the buds were still dormant. Beyond question, this has materially reduced our percentage success. However, out of 1348 budded trees so transplanted, 1147, or 85 percent, are now growing well. To put it mildly we are nothing short of jubilant over this result. It is plenty good enough to make budding practicable on a commercial scale.

"When trees are budded in the fall the principal hazard is that the buds will be killed during the ensuing winter. Several different methods of carrying the trees over the winter were tried to gain information on the best means of avoiding this injury. Although we had a very cold winter, the weather in the fall was favorable for hardening the trees and no injury occurred on any of the treatments. The point that makes us most optimistic is that one of the methods consisted of covering the buds with earth as the trees stood in a nursery row. It seems certain that even in cold winter no temperature low enough to injure the buds could occur under two inches of soil. With this treatment the only question was whether or not covering with earth would itself be harmful. Definitely it was not. The trees treated in this manner gave slightly the best results of all. It may be that we have already hit the solution of the problem of budding tung trees; namely, to bud in the fall and protect the buds during the ensuing winter by covering with earth."

## LIFE DEPENDS ON AGRICULTURE

"The well-being of a people is like a tree," says--no, not Confucius, but Shonnung, Chinese Emperor and inventor of agricultural implements, 2800 B.C., quoted in Canadian Forest and Outdoors for May, 1940. "Agriculture is its root; manufacture and commerce are its branches and life. If the root is injured the leaves fall, the branches break away and the tree dies."

## U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman, Vegetable Crop Investigations.

"Asparagus cutting continued in the 'medium' and 'long' cutting period treatments," he reported June 1. "The number and percent of culls with yield differences between treatments strongly indicate that there is a 'dead line' at which seasonable cutting must stop. Apparently, a cutting season of long duration with long intervals between cuttings has a more depressing effect on yields in succeeding years than does the shorter cutting season with more frequent cuttings."

J. M. Lutz, Handling, transportation and storage investigations.

Writing on June 8th he says: "A trip was made to Crystal Springs, Tylertown, and Columbia the early part of the week. Tomatoes are not looking any too well at Crystal Springs. They were suffering badly from lack of moisture Monday and considerable blossom end rot was showing up. Snap beans were scarce and high in price. They were suffering badly from lack of rain. Cabbage shipments are about over. Some nice potatoes were seen at Columbia; also some nice specimens of sunscald!"

N. H. Loomis, Small fruit investigations.

"The major portion of the week ending June 8th was devoted to dewberry work. Heavy yields were obtained of the Young, Thornless Young, and Cameron, while the Boyson berry was just beginning to ripen. This is the second year that the Cameron dewberry has fruited here and this year it has given yields that would make it a desirable commercial variety, for it is of good size, nice quality, and firm. A most desirable characteristic from the growers' standpoint is the lack of thorns although it is not entirely thornless."

## CHEYENNE HORTICULTURAL FIELD STATION

"The burst of spring bloom was at its height during the week, with lilacs, spirea, and bush honeysuckle making a fine showing," Dr. A. C. Hildreth writes from Cheyenne, Wyo. on June 8th. "Lilacs were exceptionally good this year, making the finest display we have ever had. In fact, they were so good that a carload of people from California stopped and got out to inquire where they could get some of these lilac bushes, as California lilacs did not bloom like that! When someone from the Golden State makes such a statement, the Station lilacs must be good...The hail storm on Tuesday night completed the bloom on the fruit varieties. Some varieties on which fruit had already set had much of the fruit knocked off or badly blemished."

This is a very busy season at the Station, the high pressure activity there warning up things to such an extent that it was possible to let the fire in the greenhouse boilers go out before the end of May, with some coal being left over to start on next Fall!

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#### MAGISTAD MADE ASSISTANT CHIEF OF BUREAU

Dr. O. C. Magistad, who has been in charge of the U. S. Regional Salinity Laboratory at Riverside, Calif., since 1938, has been appointed Assistant Chief of the Bureau of Plant Industry, and will give special attention to the soils investigations of the Bureau. He will be succeeded at Riverside by Dr. R. H. Walker, who has been serving as dean of the college of agriculture and director of the Utah Agricultural Experiment Station at Logan, Utah.

Dr. Magistad has a wide background of experience in soils investigations in the United States, Central America and the Hawaiian Islands, with service as director of the Federal Hawaiian Agricultural Experiment station that supplied him with sound experience as an administrator in various agricultural lines. He has made a remarkable impression on those of our personnel who have come in contact with him cooperatively, and he will be enthusiastically welcomed.

#### DR. CROOKS TAKES OVER DRUG AND RELATED PLANTS

Another important addition to the Bureau's personnel that comes even closer to us perhaps, since the Division of Drug and Related Plants is now located at the Beltsville station, is the appointment of Dr. D. M. Crooks to head that Division. Dr. Crooks is at present head of the Department of Botany of the University of Arizona, and Botanist of the Arizona Agricultural Experiment Station. For some time he has been giving considerable attention to investigations dealing with drug and related plants in the Southwest. In view of the renewed interest in drug and medicinal plants and the desirability of having as many of these crops grown in the Western Hemisphere as possible, the Bureau is especially fortunate in having Dr. Crooks become associated with the the work in this field, in which he has already made important contributions. Welcome to Beltsville, Dr. Crooks!

#### DR. SCHREINER ADVISOR ON SOILS

Dr. Auchter also announces that Dr. Oswald Schreiner will on July 1 assume duties as advisor to the Chief of the Bureau of Plant Industry on soil problems connected with its work. His wide contact with soils and fertilizer problems in this and other countries especially fits him to render aid in the many soil problems confronting the Bureau. He entered the old Bureau of Soils in 1903 and three years later was placed in charge of soil fertility investigations. He was American delegate and chairman of the executive committee of the International Congress of Soil Science in 1927 and 1935; delegate to the Pacific Science Congress in 1929 and to the International Sugarcane Technological Congress the same year. He received the Ebert prize in 1900, the Longstreth Medal of the Franklin Institute in 1912; and was president of the Association of Agricultural Chemists in 1928.

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### ADVANCE OF FUNDS CHECKS

It has been our practice to have checks covering advance of funds sent to the Department by the Treasury Department, to be called for by some one from the Business Office and mailed out to the person needing the funds. This quite often makes necessary a special trip by one of our employees to Washington to get the check, with incidental loss of time. Under the circumstances, it seems likely that time may be saved by having such checks mailed direct from the Treasury Department to the traveler. Therefore, when making a request for an advance of funds, be sure to state clearly the address to which the check should be mailed.

In this connection, keep in mind the fact that requests for advance of funds must reach us well in advance of the time the travel is to be performed--say, 10 days at least. This is the only way to make certain that the check will reach you in time.

### A "REG'LAR" GUY!

There is a famous old story about a certain Mose Johnson who was making a fine success of his tiny farm. Mose was visited by his Parson one day, and the latter complimented him quite highly on his success in growing things. The Parson decided, however, that it might be well to impress upon Mose his dependence on Providence, and remind him that he should be thankful. Mose readily acknowledged the debt, but as the tour of the farm proceeded and the Parson continued to emphasize this dependence upon Providence for all the results, he became a trifle aggrieved. "Lissen, Pahson," he burst out, finally, "yo' nebber seen dis place, did yo', when Providence had it all to itself?"

Even though we may try to conceal it, most of us welcome an expression of appreciation of our efforts. I was thinking of this in connection with the success of our annual picnic. So many favorable comments have been received on the way in which the affair was managed. Too, those who attended have commented enthusiastically on the loveliness of the log cabin and its surroundings. Nobody as yet has asked who is responsible for the attractive surroundings. They didn't just happen--the grass, the trees, the flowers, the well kept grounds. Somebody evidently did a lot of work to bring about the present conditions. No, you are wrong; we are not leading up to a statement that the News Letter's editor did the work. Guy E. Yerkes is the man who works behind the curtain and arranges this "natural" scenery. Right now, I judge, he is the only person at the Beltsville station who is actually planning and working for the next picnic!

This a labor of love with him, this all-year job of primping the cabin lot. He doesn't expect any expression of appreciation--so we'll just surprise him with this because he's a "reg'lar" Guy!

## ADMINISTRATIVE NOTES

Auto Mileage We have good news for those who have occasion to use privately owned automobiles for official travel. An Act approved April 25, 1940, substitutes the words "a privately owned" for "his own" in the regulations governing the use of such cars. This amendment, of course, changes section 12(2) of the Standard Government Travel Regulations also.

Heretofore, it has been necessary, that an employee personally own the automobile, and prove it, before he could receive mileage for its use on official business. In future any privately owned automobile may be used. Strike out the words "his personally owned" in Section 12 (a) of your copy of the Travel Regulations, and write in "a privately owned."

However, don't forget to also get your L. A. amended!

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Outside Publications A memorandum to heads of Divisions from the acting director of the Department's Office of Information says that the carbon copies of manuscripts offered for outside publication frequently come to his office on such thin paper that they tear easily and are extremely difficult to read. He asks that we use a yellow sulphite paper (Government Printing Office Stock No. 290) for the first carbon copy of such manuscripts, this to be marked for the use of the Office of Information.

As you probably know, an original and two carbon copies are needed of all manuscripts offered for outside publication. The original is returned to the author after approval by the Chief of Bureau; one carbon copy is sent to the Office of Information; the other carbon is kept in Mr. Gilbert's section. The Office of Information copy is the basis for press releases and similar useful publicity for our work and is circulated among a half-dozen or so editors and writers. It is thus to our interest to see that it is clean-cut, easy to handle. So please ask the Business Office to provide you with Stock 290.

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Botanical Nomenclature "The Department Committee on Plant Names, after careful consideration recommends that the Department of Agriculture follow the International Rules of Botanical Nomenclature in all official publications," says a memorandum from the Office of the Secretary, dated April 30, 1940, and signed by Secretary Wallace. "This recommendation is agreed to by the Chiefs of the Bureau of Plant Industry, the Forest Service, and the Soil Conservation Service, the Bureaus of the Department most concerned with plant problems. In accordance with this recommendation, the International Rules are approved as official for the Department of Agriculture."



## PERSONAL MENTION

The following field trips have been authorized for members of the Beltsville staff:

Mr. D. F. Fisher to New York and New Jersey to confer with market pathologists and to inspect experimental shipments of sweet cherries from Wenatchee, Wash. These test shipments are being accompanied by Mr. E. D. Mallison of the Beltsville station and also Messrs. Fisk Gerhardt and A. L. Ryall of Wenatchee and Yakima, Wash., as well as by a number of railroad officials.

Later Mr. Fisher plans to go to Meridian, Miss., to confer with members of his section and Division staff members regarding future investigational work.

Dr. J. R. Magness to Georgia, Mississippi, Texas, Wyoming, Iowa, California and Washington, for the purpose of visiting field stations and to plan research programs in fruit production and breeding.

Dr. F. E. Gardner to Florida to consult with Bureau representatives regarding citrus and subtropical rootstock investigations.

Dr. H. L. Crane to Mobile, Ala., to make arrangements for the establishment of an additional laboratory for tung investigations at Fairhope, Ala.

Dr. Charles Brooks and Mr. H. A. Schomer to Georgia to conduct investigations on CO<sub>2</sub> treatments in shipping peaches.

Dr. George M. Darrow to inspect strawberry and blueberry selections in Maryland, New Jersey, Connecticut, Massachusetts and New York.

Dr. F. P. Cullinan to Georgia to conduct investigations in peach breeding.

Dr. C. A. Magoon to make field studies of muscadine grape plantings at the Coastal Plain Station, Willard, N. C.

Mr. C. W. Mann of the U. S. Horticultural Field Laboratory at Pomona, Calif., was a recent Beltsville visitor, following a test trip with citrus fruit to New York.

Misses Dorothy West and Elizabeth Nash are new appointees to the Beltsville clerical staff.

Vol. 12 No. 13

July 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI - MONTHLY NEWS LETTER

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
July 15, 1940

No. 14

Pecan Problems "With the development of the pecan industry in the South the insects and diseases that attack the pecan have increased in economic importance" points out one of our most important new publications--Farmers' Bulletin No. 1829, "Insects and Diseases of the Pecan and Their Control." It was prepared by G. F. Moznette, C. B. Nickels, W. C. Pierce, and T. L. Bissell of the Bureau of Entomology and Plant Quarantine; and J. B. Demaree, J. R. Cole, H. E. Parson and John R. Large of our Division.

This new publication, which supersedes Farmers' Bulletin 1654, Insects of the Pecan and How to Combat Them, and Farmers' Bulletin 1672, Diseases of Pecans in the Southern States, contains 70 pages of text, with 64 figures, making it one of the most comprehensive bulletins in the series. It sells for 10 cents, instead of the usual 5 cents for Farmers' Bulletins.

The insects causing the most damage are the pecan nut case-bearer, the hickory shuck worm, and the black pecan aphid; and the most destructive diseases are scab and rosette. The bulletin supplies information that will enable the grower to recognize these insect and disease enemies of the pecan, and describes the most up-to-date methods for controlling them. It prints a spray schedule that if carefully followed should provide satisfactory control of most of the serious diseases, and many of the insect pests now known to damage the crop; though, of course, it is occasionally necessary to work out control programs to fit certain local conditions.

## NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"A local late frost of severe proportions occurring on May 27 in Lewis county in the vicinity of Chehalis, Wash, appears to have resulted in a sharp reduction in the filbert crop in that vicinity," he reports June 22d. "This is indicated by the death and abscission of many young nut clusters. The damage is worse in low spots in the orchard. This is the first evidence of damage to the filbert crop from the late spring frosts. This same frost also killed many young walnut fruits on trees in the vicinity of Chehalis, Wash., resulting in a sharp reduction of the crop. Young leaves on the trees from the ground line to about six feet above were also killed. Walnut bacteriosis is present in varying amounts ranging from 10 to 30 percent in the orchards visited in a disease survey in filbert and walnut orchards in western Washington. Orchards sprayed according to our recommendations, however, have less than 5 percent blight."

F. N. Dodge, Shreveport, La.

"The chestnut crop on the hill station looks especially promising this year," he writes June 22d. "One chestnut hybrid from Bell station that was planted in 1938 has 30 burrs on it, which makes them rather thick on a tree less than four feet high! Other trees of this same source and planting have a large quantity of burrs for their size. It is apparent that this group of trees are especially prolific and early bearing. Many of the other trees planted in 1938 have burrs, as does those planted in 1937. Most of the oldest trees, which were planted in 1936, have excellent crops."

Max B. Hardy, Albany, Ga.

"Reports are beginning to come in of heavy drops of nuts in various sections," he writes June 22. "These reports of nut drop usually begin about this season and it is unlikely that the amount of dropping is much heavier than normal although some increase is expected following the cold spell in April and the drought in May and early June. Insects appear to be causing but little of this general drop, although the nut case-bearer has been more than usually active this year and has done a considerable amount of damage, especially in those orchards with a light set of nuts."

C. E. Schuster, Corvallis, Oreg.

"We are definitely in the dry season for the summer," he reports June 22d. "Practically no rain has fallen in June and we have had considerable high wind with low humidity. This is rapidly bringing out leaf troubles on walnuts, although it has not apparently affected the filberts to any considerable extent."

## DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N.J.

"The weather during the past two weeks has been rather cool for this season of the year, with an average daily maximum of 80°F. and an average minimum of 57°," he writes June 30th, from the Cranberry and Blueberry Disease Laboratory. "Minimum temperatures recorded on the 21st and 22d at Pemberton were 44°F. and 42°, respectively, but were accompanied by damaging frosts on cranberry bogs. Rainfall for the period was 1.58 inches, of which nearly half occurred on the afternoon of the 28th.

"The stage of growth of cranberries on June 21st varied from bog to bog, depending on the variety, drainage, and the time at which the winter flood was drawn. Some April-drawn Early Blacks had begun to bloom, while on Howes that had been held until May, the flower buds were still small and inconspicuous. Most bogs had reached the "dangle" stage.

"Damaging frosts after the middle of June are rare in New Jersey and many growers had drawn down their reservoirs, considering that frost danger was past. There was no warning of frost from the Weather Bureau on the 20th, but bog temperatures dropped as low as 27°F. That night. Most growers were aroused on the 21st and used all available water. That night, temperatures below 25°F. were recorded. A check-up of bogs is not yet complete, but the damage has been considerable. Some growers estimate their loss above 20 percent, and a 10 percent loss for the State is probably very conservative. It is thought that there was more damage on the first of the two cold nights. Spraying and dusting for control of fruit rot and insects are under way on nearly all properties. Many bogs are now in blossom.

"It seemed likely that temperatures as low as those of the 21st and 22d might injure partly grown blueberry fruit but we have not as yet seen any evidence of this. The harvest season is later in starting than for many years. The first few crates were shipped from New Jersey on the 27th, but most growers will not start to pick until July 1st. With the coming of frequent rains, blueberry growth is improving and prospects for a moderately good crop are looking better. Some varieties, especially Pioneer, will be short.

"A few trips were necessary to cranberry bogs and blueberry fields, during the past two weeks, but most of our time has been spent in the seedling plantation at Whitesbog, erecting a shelter in which to test the seedlings for resistance to the false blossom disease."

## DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

"Injury as the result of oxygen deprivation during the winter flooding period is very extensive but it is difficult to estimate the effect that it will have on the size of the crop," he writes June 18th. "Where the water has held late, injury is severe and on most of the bogs that I have seen it looks now as if there would not be enough berries to make it worth picking them. bogs on which water was not held late, injury was less severe, but except on those very shallowly flooded the crop will be cut more or less; in some cases, I believe, as much as half. The only bogs that I have seen that are in really good condition and which have a normal flower bud development are those which were flooded very shallowly, i.e., with the vines barely covered, and from which the winter flood was drawn off early. It appears now as if the crop for 1940 will be less than the average.

"Although there was very extensive injury as a result of oxygen deprivation during the winter flooding period there is very little leaf drop this year and this occurred mostly on bogs on which the water was held late although some has been reported on bogs from which the water was let off early. On those bogs leaf drop occurred only in areas where the water was 2 to 3 feet deep. Oxygen deprivation injury this year is manifesting itself as dead terminal buds and arrested development of the new uprights from the terminal buds with the killing or imperfect development of the flower buds. Many buds will not develop to the flower stage and many of those that do will not mature fruit even if fruit sets.

"Blueberries also have been badly winter killed in some locations but I have not seen enough plantings to know how general it may be. In the State Bog planting Rubel, Concord, Jersey and Stanley will have no berries although they blossomed quite well. Cabot will have a better crop than any other variety. Wareham and Harding will also have a fair crop. Although there are lots of berries on Pioneer most of them probably will not develop size enough to make them worth picking."

He had written earlier: "Observations have been made at intervals since the winter flood was let off on the condition of the cells of cranberry leaves, on their chlorophyll content, sap density and dry weight in order to determine the visible condition and physiological activity of the leaves soon after they have come out from the winter flood and to observe the changes that occur as the season advances. Microscopic examination of the leaves very early in the season

## DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman (continued)

showed that many of the cells of the leaves were more or less plasmolyzed and many other cells not plasmolyzed showed completely disorganized cell contents. Starch was almost entirely absent; some cells showed very slight traces of starch. The chlorophyll content of the leaves soon after the winter flood has been let off is very low, about one-third that at the height of the season (June-July). Sap density is also very low and the dry weight lower than at any other time of the year. The latest measurements made this week show a slight increase in chlorophyll content, sap density and dry weight. The chlorophyll content of leaves from plots sprayed twice last summer with bordeaux and of leaves from plots not sprayed were exactly the same. Sap density was slightly but consistently higher through two series of measurements of sap from leaves from sprayed plots than from leaves from plots not sprayed."

John H. Weinberger, Fort Valley, Ga.

"Early Rose Harvest is now in full swing, and Early Hiley movement will take place next week," he reports June 17th. "The peach market took a drop in the middle of the Unceda season, but prices are still fairly good. Half-bushels of Early Rose on Saturday brought 90 cents to \$1.00 f.o.b. Peach men who have seen some of the 14 seedlings of ours that have ripened thus far are more enthusiastic about them than we are, and reliable authorities like A. J. Evans and Dave Strother freely predict the end of the Unceda and Early Rose varieties..."

He had written June 10th: "The cheesecloth pollination cages were removed on Tuesday from Hiley and No. 8 trees. They had served their purpose in preventing loss of fruit from curculio, and were no longer necessary. The appearance of the trees was striking, being almost identical with that of phony trees. The leaves were large, dark green, flat, standing out from the branch without curling, and compact. The internodes were short, and apparently the fruit will be smaller. It seems the phony disease has the same physiological effect on a peach tree as shading."

John C. Dunegan, Fayetteville, Akr.

"The first blotch specimens of the 1940 season were collected on our check plots on June 17th. Brown rot on mature Mayflower peaches was also noted on the same date. Bacterial spot is beginning to appear in an aggravated form in some of the orchards. This rapid development of the disease is undoubtedly due to the continued showery weather. The young orchard southeast of Springdale that was so severely attacked last year is developing a most severe case again this year. The owner was urged to apply zinc lime sprays at the beginning of the season, but has neglected to do so, and the disease has gotten out of control again."

## SUBTROPICAL FRUIT INVESTIGATIONS

C. S. Pomeroy, Riverside, Calif.

During the past spring we continued the study of several factors that might influence the percentage of citrus flowers setting fruit. Since flower treatment in 1939 with 0.01 percent naphthaleneacetic acid gave variable results, this was repeated on both Washington Navel orange at Riverside and Marsh grapefruit at Indio. Over 650 paired sets of flowers on 53 orange trees, and 270 pairs of flowers on 31 grapefruit trees were sprayed with 0.01 percent naphthaleneacetic acid with no significant change in fruit set. Also, young leaves were cut while immersed in this solution in the hope that if this growth promoting substance were drawn into the leaf the set of the nearby flowers might be affected. No effect was observed on either Washington Navel orange or Marsh grapefruit.

Pollination with Fard date pollen, known to have an active supply of auxin, gave in 1939 what appeared to be a significant increase in set on Washington Navel orange. A repetition of that treatment the past spring using 265 sets of flowers on 31 trees showed no influence from the Fard pollen, but pollen of a seedy grapefruit (Pernambuco) increased the set nearly 200 percent above that of the control flowers as observed May 27th. For Marsh grapefruit at Indio, Calif., fruit set was considerably reduced by Fard date pollen while a seedy grapefruit (Foster) pollen increased the set practically 100 percent... Heavy (about 25 percent twig removal) and medium (about 12 percent) pruning of 40-year-old Washington Navel orange trees in April or in June, 1939 decreased the number of fruits produced in the 1939-40 season from 27 to 35 percent.

Some desert grapefruit growers believe that irrigation during full bloom reduces the set of fruit, so this practice was tried at Indio in 1940, with 8-year-old grapefruit trees in a deep, fine, sandy loam being left without irrigation during February and March, the common commercial practice. Although the surface soil was depleted of moisture in late March to the point that mustard died and clover wilted after 8 a.m. the grapefruit trees showed no indication of severe water shortage. Duplicate rows of trees were irrigated on March 15 and again on March 29, which resulted in high soil moisture during the entire period of flowering. Counts on 5 inside and 5 outside branches on 20 irrigated and 20 control trees showed no appreciable effect of these two irrigations on set of fruit.

An apparently significant increase in fruit set has been evident in a plot of 82 rather weak, old trees, half of which were girdled on the trunks by a knife cut during the blooming period in 1939. These girdled trees produced nearly 46 percent more fruits by count this spring than the comparable check trees, the box yields being 5.26 and 3.68 respectively. This method of girdling has been a commercial practice of some growers in recent years on normal trees but has been almost entirely abandoned because its results vary with the season and its continued use results in a definite reduction of tree growth.



## SUBTROPICAL FRUIT INVESTIGATIONS

Harold F. Yates, Fairhope, Ala.

"Within 48 hours after the freeze in January, statisticians and men from various organizations wanted an estimate as to the amount of damage to the citrus trees in the Gulf Coast section," he writes from the Alabama Gulf Coast Substation on June 24th. "Now that five months have passed a fairly accurate estimate of damage can be made, although branches of some trees and entire trees are still dying.

"January 1940 made a record for itself so far as the weather was concerned. A temperature of 12°F. was recorded on January 27th, which was the second lowest temperature on record for this section. We had 15 nights when the minimum temperature was below freezing. During this time we had the lowest mean temperature ever recorded for that length of time. Some of the low temperatures we had were as follows: 19, 18, 16, 14, 14, and the low, which was 12°F.

"All the Satsuma trees in the Gulf Coast section were defoliated and probably 60 percent of the trees were killed. In most cases, with few exceptions, the trees that were killed were in a very weak physical condition prior to the freeze, due to Purple Scale infestation or poor cultural and fertilizer practices.

"There were a few orchards that came through the freeze in relatively good shape. The orchard on the station was one of the few. We lost .08 percent of our trees and about 20 percent of our bearing wood. Despite this condition the trees have responded well to treatment and have set a light crop of fruit this year.

"The trees in the variety and rootstock plots showed a greater range in hardiness than did those in the fertilizer plots. The loss of bearing wood varied from 2 percent to 100 percent, depending on the variety and rootstock, whereas the number of fruit set per tree varies from 0 to 200. Some varieties that suffered very little damage from the freeze did not set any fruit this year, while others with apparently the same amount of damage set one third of a crop.

"The Mizomota, Kashima, Sato, Hozaki Wase (early), and Silverhill are some of the varieties that were slightly damaged but set only a few fruits, whereas the Takegami Wase (early) set one third of a normal crop. The Citrus trifoliata stock seemed to give the trees more resistance to low temperatures than did any other stocks.

"The trees that did survive the freeze are making a good growth, and if we have something like a normal winter these trees should set a good crop next year."

## CHEYENNE HORTICULTURAL FIELD STATION

"It has been necessary, because of lack of rainfall, to irrigate heavily for the last week," Dr. A. C. Hildreth writes under date of June 22d. "So much water has been drawn from the reservoir that the level is getting dangerously low..."

"Dr. Powers' crew has spent most of the week taking records on emergency cucurbits and in bagging and pollinating roses and raspberries. Dr. Benedict and Mr. Lauridson spent some time the first of the week planting grass experiments for drought resistance studies in the greenhouse... Weeds seem to thrive in the warm weather we have been experiencing, and most of the station equipment has been kept busy cultivating.

"There was a light frost June 9th, with a temperature of 30°F., but very little frost damage was noted in the experimental plots. The mercury began to climb the following day and by Saturday a temperature of 81°F. had been reached."

## ADMINISTRATIVE NOTES

Dr. Hamilton P. Traub, who has been in charge of citrus and subtropical fruit investigations, is transferring his headquarters from Orlando, Fla., to the U. S. Horticultural Station, Beltsville, Md., where he will conduct special research work on plant hormones.

Dr. Frank E. Gardner, section leader for the nursery stock production investigations, will relieve Dr. Traub at Orlando. The nursery stock work has been allocated to the fruit and ornamental horticultural plant projects, where the rootstock studies will be conducted along with related lines of work.

Effective July 1, 1940, certain activities of the former Division of Soil Fertility Investigations, consisting of soil fertility studies in connection with pecans, potatoes, deciduous and citrus fruits, were transferred to the Division of Fruit and Vegetable Crops and Diseases. These activities will be coordinated with the work of this Division at the stations mentioned below and by the following personnel:

Richard A. Lineberry, assistant chemist, Raleigh, N. C.; George M. Bahrt, associate soil technician, and Wallace R. Roy, assistant biochemist, Orlando, Fla.; Rulon D. Lewis, associate soil technician, and James H. Hunter, assistant soil technician, Albany, Ga.; Arthur O. Alben, associate soil technician, and Harold E. Hammar, assistant chemist, Shreveport, La.; and Bailey E. Brown, senior biochemist, G. V. C. Houghland, associate soil technician, Marcha W. Hawkins, assistant clerk-stenographer, and one laborer, at Beltsville, Md.

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ADMINISTRATIVE NOTES

Gasoline For a number of years our field stations have been meeting their service station requirements for gasoline, etc. in connection with the operation of Government-owned cars by taking advantage of the various regional contracts of the Navy Department, Department of the Interior, Forest Service, etc. The Schedule of Contracts entered into by the Procurement Division of the Treasury Department also makes available nation-wide service station deliveries of gasoline, and lubricating oil, plus the furnishing or replacement of accessories usually available to the public--lubricants, anti-freeze, tire or tube repairs, washing, battery service and the like--for the Fiscal Year July 1, 1940 to June 30, 1941. Each State is covered by two or more companies so that adequate service appears to be assured.

We must meet our service station requirements through these contracts, of course. Courtesy cards may be obtained on direct request to the contractors, such requests to indicate the United States Department of Agriculture license number of the automobile to be serviced.

The Navy Contract Bulletin covering nation-wide deliveries of lubricating oils in drums or case lots for the Fiscal Year 1941 was mailed to field stations the last week in June. The Texas Company has the contract (No. 73802) for the entire country at prices ranging from \$0.103 to \$0.299 per gallon, 1 percent 10 days, depending on the grade of oil and the point of delivery. No order is to be placed for less than 10 gallons (2 5-gallon cans in a case) except that deliveries in 1-gallon containers may be ordered in quantities of 1 or more gallons. A charge of 90 cents per case is added for containers when purchased in 5-gallon tins and 50 cents per gallon added if purchased in 1-gallon containers. All purchases of lubricating oil in bulk must be made from this contractor.

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Automobile Reports The Business Office has also sent out a supply of Form AD 186, to be used from July 1, 1940, until further notice in recording the cost of operating Government-owned passenger-carrying automobiles. The form contains instructions for its use, and these instructions should be followed carefully. One copy of the form is to be submitted to the Business Office promptly at the end of each month.

It is recommended that one of these forms be carried in the car at all times so that the various operating expenditures may be entered at the time the expense is incurred. Mileage will be summarized under "Remarks," together with notation of average cost per mile, number of days operated, and miles per gallon of gasoline.

## ADMINISTRATIVE NOTES

Rural Electrification Administration A notice from the Director of Information tells us that the Administrator of the Rural Electrification Administration reports that in a number of instances field offices of the Department have referred to regional directors of the Federal Power Commission requests for information about the Rural Electrification Administration. The regional personnel of the Federal Power Commission cannot answer requests of this kind, of course. If you receive requests for information about the Rural Electrification Administration, send them to us for reference to the Washington headquarters.

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Vouchers Little Bessie's aunt was very much surprised to see her returning from the dentist smiling and cheerful. "You've been to the dentist's haven't you?" she asked. "Yes, indeedy," replied Bessie, cheerfully. "Well, I think it's remarkable for a little girl like you to be so cheerful about it. Here's 25 cents as a reward for being so brave. What did the dentist have to do this morning?" "He pulled out two of Willie's teeth," said Bessie.

What I mean is that the folks in the Business Office feel that you do not pay more attention to the preparation of vouchers because, after all, handling them causes you no particular suffering. But when vouchers and pay rolls come in here typed with an old ribbon that makes the original difficult to check that's like pulling one tooth, you understand. And when we turn to the carbon copy and find that it is too faint to read--there goes the second tooth! To add insult to injury, since voucher forms were revised a year or so ago some workers use the new form for the original copy but the old forms for the carbons--so that the originals and carbon copies do not match and we have to recopy them here because the Bureau's accounting office will not accept the misfits.

How about turning over a new leaf as the Fiscal Year starts and making certain (a) that a fairly good typewriter ribbon is used; (b) that carbon paper not too badly worn is used; and (c) that in the case of long forms, and especially pay rolls, the carbon paper extends to the outer margin of the form so that the carbon copy really shows all the data that goes on the original?

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Duplicating Beginning July 1, 1940, submit an original and three copies of requests for duplicating work by the Addressing, Duplicating and Mailing Section of the Department. An original and two carbon copies have to be sent to the Office of the Chief, and our Supply Sections needs one carbon. Order immediately a supply of the New Form AD-72, as this has on its back a table for recording cost, etc.

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### TEAR GAS CLEARS GLADIOLUS DISEASE FROM INFECTED SOIL

"Treatment of infected soil with chloropicrin (tear gas) makes it practical to grow gladiolus in soil where previous plantings have been destroyed by the fungus disease known as yellows, caused by related strains of a *Fusarium* fungus," says a Department press release. "Experiments started last year by Miss Lucia McCulloch of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, are being continued this year, but results seem conclusive enough to warrant growers and gardeners in making use of the method.

"Gladiolus yellows is widely prevalent, and science has not yet found any method of sterilizing the gladiolus corms to prevent development of the disease in infected planting stock. Planting clean stock in clean ground is the best insurance against the disease which causes a yellowing of the foliage and usually an early death of the infected plant. Clean stock planted in infected soil usually becomes infected. The disease organism lives in the soil.

"The chloropicrin treatment has the effect of sterilizing the soil, and in test plantings last year the plots of heavily infected soil treated with the chemical yielded slightly better crops of bloom than similar plots of soil sterilized by steam.

"Miss McCulloch's method was to inject 2 cubic centimeters (about one-half teaspoonful) of the chemical into each square foot of soil at a depth of about 5 inches. The soil is then moistened thoroughly and covered with a layer of gas-proof paper for 5 days. When the soil had lost all odor of the chemical (about 13 days after treatment), it was ready for planting.

"This treatment, says the department, is not practical when the plan is to plant gladiolus in association with perennial plants, since the chemical would destroy the living plants. It could be used, however, where gladiolus is planted in rows for cutting, or in beds where seeds of annual flowers are planted after the odor of the chemical has disappeared. Chloropicrin has been used as an effective but somewhat expensive weed-eradicator, also.

"Gardeners who do not have a satisfactory device for injecting the chemical could probably get reasonably satisfactory results by forcing a one-inch iron bar into the ground to a depth of five inches, then applying the chemical from an oil can with a long spout and immediately filling the hole with soil.

"Chloropicrin is not dangerous, but the gas is very uncomfortable for the eyes!"

Vol. 12 No. 14

July 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Vol. XII                      U. S. Horticultural Station, Beltsville, Md.                      No. 15  
August 1, 1940.

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Beltsville                      "Crops prospects from nut trees of bearing age at the U. S.  
Nut Trees.                      Horticultural Station, Beltsville, Md., are very satisfac-  
tory," writes C. A. Read of the section of Nut Investiga-  
tions on July 15th.

"Heavy applications of fertilizer each spring for several years plus good rains in May of this year, have put the trees in good condition, despite the driest June on record in this locality. (The Weather Bureau reports the total precipitation for the month of June as 0.36 of an inch!) Flowering was heavy with practically all species, and thus far the drop has not been serious.

"A number of hybrid filbert plants were killed outright by last winter's cold weather. On certain other filberts and on some of the Persian and Japanese walnuts, the staminate buds were killed. The loss of a few hybrid filberts is nothing to regret, however, as it is to be expected that some will prove lacking in hardiness. In fact, the sooner these that are lacking in hardiness are eliminated, the better.

"Out of more than a hundred Persian walnut trees set out in 1932 and 1933, all but about forty have been removed because of their inability to thrive under the ecological conditions of Beltsville. These will bear perhaps two dozen nuts all together this season. The trees appear to have become established, however, and may do well from now on. Most of the Japanese walnuts are fruiting well this year. Black walnut prospects are also promising, as almost every tree five feet in height or over has set a good crop.

## NUT INVESTIGATIONS

C. A. Reed (continued)

"With the exception of the pecan, hickories customarily burst into leaf during late May, grow furiously for four or five weeks, then go into a state of virtual rest for the remainder of the summer. This year several hickory varieties were particularly full of both staminate and pistillate blossoms. In most cases the drop was heavy immediately thereafter, but a number of varieties are retaining enough nuts for fair crops. The Hagen, Linginfelter, and Shaul shagbarks all have good sprinklings of nuts. Hagen and Shaul are from Iowa, and Linginfelter is from central Pennsylvania. Individual trees of several grafted hickory varieties are among the handsomest of any on the station grounds at Beltsville. For sheer beauty, they would stand out in any park.

"Two especially interesting lots of trees are groups of supposed walnut hybrids, procured from the collection of the late W. G. Bixby, Baldwin, L. I., in the fall of 1934. One lot, consisting of eight trees, is supposed to have resulted from a cross of Lancaster (heartnut) with Hall (Persian). The other, consisting of but two trees, is supposed to have resulted from an Aiken (butternut) crossed with Royal (Burbank's *Juglans hindsi x nigra*). The trees of both groups are remarkably vigorous and uniformly handsome. All are much alike, and nearly all are in bearing this year. None shows characters that would indicate a relation to the supposed pollen parent. The fruits of all are forming in clusters similar to those of heartnut and butternut. In general form all the nuts are butternut-like. But determination of just what value the mature nuts will have is being awaited with much interest."

Milo N. Wood, Sacramento, Calif.

"Our dichogamy records show that in the Central Valleys especially, the Payne and early blooming walnuts had a much better pollination season than the average," he writes June 29th. "Dichogamy should not result in diminished yields per acre of these early blooming varieties in the valley and the yield should, therefore, be high. This, of course, does not take account of blight or other factors that might reduce the crop. So far as the Franquette and some of the late blooming varieties are concerned, dichogamy will in some instances where the varieties are planted in single blocks, reduce the crop unless artificial pollination has been resorted to, as was frequently the case. The same thing, of course, would be accomplished if other varieties shed pollen at the right time." Along the coastal regions the Franquette and other varieties showed an excellent pollination condition so far as pollen production periods and receptive pistil conditions occurred in each variety...In coastal regions, delayed foliation was considerably worse than usual."



## NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The forepart of the week ending July 6th was spent mostly in the Scholls district taking results of spraying tests for control of walnut blight. In tests carried on in the Brown and McClure orchard in this district, copper oxalate containing 40 percent metallic copper at the rate of 3 pounds to 100 gallons of water appears to have given better control of walnut blight than bordeaux mixture 6-2-100 plus a heavy spray oil, 1 pint to 100. Thus, two applications of copper oxalate 3-100 reduced the incidence of infection from 29 percent to 3.8 percent, while the same number of applications of bordeaux mixture 6-2-100 reduced the incidence of infection to 7.1 percent. Yellow cuprous oxide 2-100 and red cuprous oxide 2-100 plus 'Orthex' sticker, 1 quart to 100, did not give as good control as either copper oxalate or bordeaux mixture, reducing the incidence of infection to 9.3 percent and 14.7 percent, respectively. As in previous years, none of these 'fixed' copper materials was injurious to walnut foliage.

"The latter part of the week was spent largely in the Lebanon district checking on the results of spraying tests. In test in the Landstrom orchard excellent control of walnut blight was obtained by timely spraying with bordeaux mixture 6-2-100 plus a heavy spray oil, 1 pint to 100. Good results were also secured by spraying with yellow cuprous oxide 2-100. Thus, two applications of bordeaux mixture 6-2-100 reduced the incidence of infection from 35 to 2.1 percent, while the same number of applications of yellow cuprous oxide 2-100 reduced the incidence of infection to 3.2.

"The black line disorder of grafted Franquettes is taking an increasingly large toll of walnut trees in the Willamette valley. In the Brown and McClure orchard near Schools, Oreg. approximately two acres of grafted trees which were free from visible symptoms of the disorder last year now show definite symptoms. In an attempt to prolong the life of these trees, Mr. Brown is making a series of vertical cuts through the union, approximately 3 inches apart, with a rotary saw which he has improvised. The purpose of this operation is to stimulate the formation of new connective tissue between the stock and scion. It remains to be seen if this procedure will effectively re-unite the stock and scion.

B. G. Sitton, Shreveport, La.

The results of blossom counts in the Fullilove orchard are very interesting although the data are not extensive enough to be statistically significant...In the blossom data the greatest difference was between the wide spaced and the close spaced trees. The difference was 43.7 percent of the mean of the two treatments, but this difference is not significant. The next greatest difference is between bordeaux sprayed trees and the unsprayed trees when data from the rye and close spaced plots are omitted. The difference was 22.7 percent of the mean of the two treatments and is significant the F value being exactly the 5 percent level."

## NUT INVESTIGATIONS

John R. Cole, Albany, Ga.

"On Monday and Tuesday I inspected orchards in the vicinity of Shellman and Cuthbert where growers are spraying to control the scab disease," he writes from the U. S. Pecan Disease Field Laboratory on July 13th.

"A total of 15 orchards was visited and some very interesting observations were made. Most of the growers have selected 'check plots' and know exactly the kind of control they are getting. For example, since this is the first year that the growers in that vicinity have sprayed for scab control, some of them that have a large number of Schley trees sprayed only a portion of them. Now they regret that they did not spray all of their trees, since the nuts on the unsprayed ones are turning black as a result of the scab infections. A bumper crop of Schley and Stuart nuts was present in each orchard visited and the growers are very enthusiastic about their spraying for scab control..."

"Visitors to the Pathology Department of the Laboratory were numerous during the week and included Mr. I. H. Bass, Jr., prominent nurseryman of Lumberton, Miss. and Dr. O. F. E. Winberg of Silverhill, Ala. Dr. Winberg is now Secretary-Treasurer of the National Pecan Growers Exchange here in Albany, and will probably be located here permanently in the future. Mr. Morris P. Shingler of Donalsonville, Ga. accompanied Dr. Winberg to the Laboratory. Mr. Shingler is now manager of the National Pecan Growers Exchange, having succeeded Mr. W. P. Bullard who resigned after serving this Growers Organization for 22 consecutive years. Both Mr. Bass and Dr. Winberg reported that pecan prospects are very poor in Mississippi and Alabama. They attributed this nut crop failure to the freeze that occurred on April 13th. They are all favorably impressed with the spray program that Large and I have formulated here..."

## ADMINISTRATIVE NOTE

National Archives The Archivist of the United States has in his custody many records that may be consulted only by duly authorized representatives of the Government. Employees visiting the Archives building, therefore, must have a letter of introduction or other identification of this official status.

Any employee of the Division who finds it necessary to visit the Archives building to consult any of the records there should first get in touch with Mr. Allanson, who will arrange to furnish the necessary letter of introduction.

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## NUT INVESTIGATIONS

John H. Painter, Cairo, Ga. (Tung investigations)

"All of the fruits resulting from controlled pollination have been enclosed in muslin bags to safeguard them from being lost," he reports for the week ending July 13th. "While the number of crosses made at this station has not been as great as it might have been, the degree of set obtained has been extremely gratifying. From the results obtained, there is apparently no cross incompatibility.

"In the test at the Wight orchard, designed to show the duration of receptiveness of the stigma, the Chi-square analysis shows no significant difference between receptiveness the first five days of opening and the last five days. However, they do show a trend towards better set the first five days, which trend, had the number of observations been sufficiently large, might have been changed to a statistically significant difference...

"In most tung orchards in this section it looks as if weather such as we have been having is ideal for the growth of tung trees. In the young grove at Lloyd, Fla., our principle criticism is that for the high percentage of poorly crowned trees the rate of growth is too fast and some breakage has already taken place, which breakage it should be pointed out, is mostly in the spot-planted whips that did not crown the first year.

"The variation existing among these spot-planted trees that did not crown the first year is quite interesting. Photographs have been taken showing how some of them have put on a second year's growth, which again, is an uncrowned whip, now standing 8 to 9 feet in height, without any branching whatsoever. Others have branched out in a whorl of branches immediately at the point where this year's growth started. Still another type has started growing and then after 4 or 5 inches growth, has started to branch. These again do not make a very good crown. In the majority of cases where a transplant has been set in the place where a spot-planted tree did not grow, the resultant two year tree has formed a natural crown with rather good spacing of branches. Occasionally, however, even such transplants have, at this writing, still failed to crown the second year."

"Tracings were made of the leaves in the leaf-area project at Lamont, Fla. in order that a permanent record of them could be had at the station from which actual leaf-area measurements will be taken by the use of a planimeter," he writes June 29th. "It is felt that the leaf-area problem this year will certainly show results as there is already a noticeable difference in the size of the fruits, varying directly in proportion to the number of leaves furnish food for them..."

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung Investigations)

"Like other investigators, Mr. Hines has been having great difficulty in inoculating tung trees with the fungus Clitocybe tabescens which is presumed to be the causal organism of 'mushroom' root-rot," he reports for the week ending July 6th. "Believing that the fungus might gain entrance to a tree that has been weakened by exposure to low temperature, the root systems of young nursery trees were exposed at temperatures ranging from plus 23° to minus 4°F. For some unknown reason none of the roots showed oxidation and discoloration such as usually appears within a few days after treatment in tissues injured by cold. After planting out in the field, the effect of the low temperature has become quite decisive. Every root exposed to temperatures of 20°F. or lower was completely killed. Those exposed to plus 25°F. were quite uninjured. There is evidently a very definite critical point which lies between 20° and 25°F. On the basis of results with fruit trees, we had predicted that the critical point would be not lower than 16°F. It was only on account of the lack of the usual symptoms that the extremely low temperatures were tried.

"When the trees were planted out a piece of infected root was wired to each one. The infection failed to 'take' on any of the living roots, did not produce a saprophytic growth on the dead roots, and in fact died out in the inoculum. An attempt was also made to render the root susceptible by drying. Three days exposure to the warm dry air of the Post Office basement killed some trees and five days exposure was fatal to all. Here again, however, no infection was obtained, and the fungus even failed to survive in the inoculum....

"Dr. Angelo and Mr. Slick both reported observing tung trees on which female blossoms have recently occurred at the tips of the new growing shoots. These appear to have set fruit very satisfactorily. This matter is of considerable interest because if a variety can be established that blossoms on the new shoots, the frost hazard, which is now the most serious problem of the tung industry, will be eliminated. Ordinarily the tung blossoms are formed in the early summer and open early in the succeeding spring before the first leaves appear on the trees....

"Growers have shown considerable interest in the possibility of planting seeds 'in place' in their tung orchard and budding the seedlings in the spring of the succeeding year. To give the method a preliminary trial, 550 such trees were budded in late April in the orchard of Walter Green at Sunny Hill, La. Records summarized this week indicate that 239 of these buds, or about 43 percent, are now growing. Budding in the field is relatively slow as compared to budding in the nursery and the care and disbudding required afterward is much more expensive. If in the nursery weather conditions like those of this season conspire to give a low percentage of 'force out,' the loss is not nearly so serious as when this happens in the field.

## NUT INVESTIGATIONS

George F. Potter (continued)

"Since a large amount of budding has been done through the season, it was impossible to finish the work until recently. The sun is now so hot that if we were to cut off the whole tops of the stocks to force the buds, they would be very likely to scald during the initial stages of growth. Anticipating this difficulty, Mr. Merrill has tested a method which we term 'lopping' of the stock. It is slashed on the side above the bud and broken over, so that the prostrate tops will shade the new shoots starting from the buds. Unquestionably this will eliminate scald. With trees budded early in the season, however, it appears less satisfactory in other respects. Out of 100 living patch buds, 99 forced when the whole top was removed and only 36 by the 'lopping' method. The average growth for the 99 with stocks cut off is 38.5 cm. against 29.8 cm. for the 'lopped' stocks. Further evidence of the influence of the tops remaining is shown in an average increase in the diameter of the stumps. Based on measurements of 25 trees from each lot, average increase in diameter was 0.26 cm. for 'lopped' and 0.08 cm. for stocks cut off."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

George P. Hoffman (Vegetable crop investigations)

"Tomato harvest from the variety and cultural blocks is well under way at our Meridian station," he writes June 29th. "Observations and results thus far obtained this season on plantings made on newly cleared ground in comparison with similar plantings made on old ground, to which tomatoes had been planted in a two-year rotation system over a period of several years, indicate with little or no question that growers who persist in growing tomatoes on the same ground in even a two or three year rotative plan begin the cropping season with great odds against profitable returns..."

N. H. Loomis (Small fruit investigations)

"During the past week the final picking of Young dewberries was made and the vines were pruned back to the ground and given an application of nitrate of soda," he reported June 22d. "Yields in all cases increased with the number of canes left per plant. The Cameron dewberry, which is firm enough to ship, outyielded the Young. The fruiting season of the Cameron extends over a longer period than the Young."

J. M. Lutz (Handling, transportation and storage investigations)

"Work was started the week of June 16th in the crystal Springs section on handling and maturity investigations of tomatoes, a completion of work started last year on effect of maturity on Vitamin C (ascorbic acid) content of tomatoes. In addition, a study is being made of the susceptibility of various maturities to bruising injury..."

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"The Hiley season is finished in this section and it has been disappointing," he writes July 15th. "It has rained almost every day and prices for peaches have been low. Many peaches were sold to trucks ungraded at 25 to 40 cents per bushel. Market reports show 2,533 cars have been shipped from Georgia thus far compared with about 2,000 cars at the end of the Hiley season last year. This does not include truck shipments.

"Halehaven, Hiley and #8 trees which were used in breeding work were harvested last week. About 700 #8 seeds were cultured on agar. Altogether more than 4,000 seeds of selfs and crosses have been gathered and 3,000 more are anticipated on two Belle and two Hale trees. If germination is successful with these seeds, all available field space will be needed for seedlings next year.

"About 50 of the original 2,000 seedlings in the test block have been marked for retention after two season's rogueing, and of these 50, 10 are easily outstanding. By vigorous rogueing I think we can prevent the seedling situation from becoming unmanageable. The latest promising seedling is a Dewson x South Haven cross, Hiley season, which is superior to Halehaven and July Elberta in size, color and quality...

"The Early Elberta sport is ripening on schedule, a week ahead of Elberta, and the first car of this sport sold fob for \$2.50 per bushel."

He had written earlier: "The first commercial shipment of Dixigold peaches was made June 29th. It consisted of 75 half bushels in a car of Hiley from Walker's orchard at Marshallville. They were not very good Dixigolds, nevertheless they brought 25 cents a basket more than the Hiley on an Ohio market.

"Excellent seedlings continue to show up, the latest being 9-93, a Dewson x Halehaven cross. Surprisingly, a promising Cumberland selfed seedling was recorded Friday, but it had only two fruits. They were large, firm, excellent quality, and very attractive."

G. A. Meckstroth, Willard, N.C.

"Mr. Crabbe made the last blueberry picking July 8th; Mr. Covilled made his last picking, Pioneer and Concord, July 15th. All growers are reporting yields far ahead of the average. The blueberry growers are planning on making their summer application of bordeaux spray for the control of mildew, leafspot and canker," he continues, writing on July 15. "Injury due to the stem borer, *Oberea myops*, is scattered throughout the fields and some growers are going through their fields and cutting out the wilted tips of infested shoots."

## DECIDUOUS FRUIT INVESTIGATIONS

E. S. Degman, Medford, Oreg.

"Some interesting things have come to light as the season progressed," he writes July 1 from the U. S. Pear Field Station. "Trees in the dry plots began to lose their leaves at a higher soil moisture content this year than during the last two years. Since the crop is somewhat lighter this year it seemed likely that this was tied up with an earlier leaf fall. A check of individual trees tended to bear out this assumption. The trees carrying the heavier crop were losing very few leaves at the same time trees with a lighter crop were losing a great many. Leaf samples were preserved for chemical determination of their nitrogen and carbohydrate content. Perhaps the tree is better able to hold its leaves when short of water if the balance between carbohydrates and nitrogen is heavy to the nitrogen side. This same logic might explain the effect of heavy pruning on 'set', since the tree tends to send out more new shoots when pruned heavily and while these new shoots are growing the reserve probably stays more to the nitrogen side than on lighter pruned trees where new growth is less and carbohydrates have a better chance to accumulate. The addition of nitrogen fertilizer should result in this same condition. The change has been much slower however where nitrogen is added than where carbohydrates are removed."

R. B. Allyn, Medford, Oreg. (Duty of Water Investigations)

Writing on July 6th, he says: "A four inch deep sawdust mulch has been established to determine the effectiveness of mulching in preventing evaporation losses in clay adobe soil. In a 30-day period marked differences are noted over the check plot, which was left bare.

"An irrigation schedule for maintenance of increasing moisture availability as season progresses toward harvest to take advantage of progressively increasing fruit growth rates is being used on the frequent late plots this year. The first irrigation at about 30-35 percent available moisture is now being applied to these plots. Minimum availabilities will be progressively increased to around 75 percent during the final period prior to harvest."

George F. Waldo, Corvallis, Oreg.

"Activities during the week were largely confined to a study of raspberry selections," he writes June 29th. "These selections are being examined for their growth characteristics, canning, freezing, and shipping qualities, with considerable attention being paid to vigor and yield of plants and size and flavor of fruit. A number of blackberry selections and varieties are being similarly tested." Weather during the week remained warm, causing berries to ripen fast. The season will probably come to a close within a week or ten days.

## DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The Arkansas State Horticultural Society held its annual summer meeting at the University of Arkansas on July 10. Professor Cooper of the Horticulture Department discussed the apple situation in northwest Arkansas. He expressed the opinion that the majority of the apple orchards had passed their prime production period. The annual production from northwest Arkansas will continue to decline and he believes that new orchards should be set out in the immediate future to replace the old orchards. If such a program is carried out he believes the future of northwest Arkansas as a fruit producing area will be assured.

"Mr. A. H. Clement, a successful strawberry grower of northwest Arkansas, gave an interesting discussion of his experiences during the past 10 years. He reported that he had averaged 200 crates per acre even during the drought years. He attributes his success with strawberries to the fact that he believes in almost constant cultivation, proper fertilization, and adequate control of diseases and insect pests. He has departed somewhat from the regular procedures in growing strawberries but cited production figures to substantiate his claims. In the first place, he believes in applying fertilizer late in August or early September instead of in the spring. This procedure he claims insures a full set of fruit buds. Instead of commercial fertilizer he uses cottonseed meal.

"During the past two years the district has been troubled with strawberry weevil. This pest he controls with a rotenone-sulphur dust. In 1940 he harvested 2,080 crates from his 30 acres (after losing some of the crop from the April freeze). An adjacent grower who had 100 acres, harvested less than 300 crates. In this planting no attempt had been made to control the strawberry weevil and Mr. Clements felt that the production figures proved his claims for his cultivation, fertilization and dusting procedures."

## ADMINISTRATIVE NOTE

Rubber Production Congress has provided an emergency appropriation to conduct rubber investigations with a view to the development of rubber production in the Western Hemisphere. This emergency appropriation has been made to the Bureau of Plant Industry for expenditure. Dr. E. Brandes, head pathologist in charge of the Division of Sugar Plant Investigations, has been placed in charge of the emergency appropriations. He will continue in charge of the Division of Sugar Plant Investigations.

The Rubber Investigations Project will be headquartered in Room No. 340-1 West Wing, Administrative Building, U. S. Department of Agriculture.



## ADMINISTRATIVE NOTES

Registered Mail. The Department's Office of Plant and Operations tells us that it has quite a number of inquiries as to the kinds of mail that should be registered. It quotes from the United States Official Postal Guide:

"Official matter should not be registered unless (1) proof of delivery is essential; (2) it contains enclosures of intrinsic value, such as money or stamped paper; (3) the enclosure is of such importance that its duplication in case of loss would be necessary and entail material expense. Examples of matter which ordinarily do not require registration are checks and drafts of non-negotiable character and which can be realized upon only by the payee, and comparatively unimportant papers or correspondence."

Examples of matter that ordinarily may be registered are: Deeds, leases, subpoenas, summons, citations, legal papers, bids, specifications, contracts, agreements, valuable books, files, records, original drawings, manuscripts or specimens that cannot be reproduced or would require much time and great expense to reproduce.

The registration fee must be paid at points other than Washington, D.C., except when mailed by an official whose headquarters are at Washington, but who is temporarily in the field, in which case he notes on package: "To be registered: John Doe, specialist, U.S.D.A., temporarily absent from Washington, D.C." When it is desirable to register material sent under frank outside of Washington and by employees whose headquarters are not at Washington, D.C., the registration fee must be paid at the place of mailing. Reimbursement for such expenses may be claimed in the usual expense account voucher.

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Military Leave In view of the present limited national emergency a period of 21 instead of the usual 15 days has been authorized for field training for the National Guard. Members of the National Guard, therefore, will be granted 21 days during the present fiscal year for such training, without loss of pay, time, or efficiency rating.

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Trailers: Per Diem. Under an amendment to the travel regulations, where travel is performed by means of a privately-owned trailer, no per diem allowance shall be paid unless the travel by such means be authorized in advance, and when authorized, the rate is not to exceed \$2.50 per diem. Keep this in mind in case you or workers under your supervision have occasion to perform official travel in trailers.

Vol. 12 No. 15

August 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII U. S. Horticultural Station, Beltsville, Md. No. 16 August 16, 1940.

Date Palm Pollination Carl Crawford, of the section of subtropical fruit investigations, with headquarters at the United States Date Garden, Indio, Calif., has reported some very interesting work in connection with the pollination of dates. Since the date is pollinated by hand, the date grower has the opportunity to take certain precautions to insure a satisfactory set of fruit.

"First of all," he writes, "a male (seedling) with pollen compatible with the female to be pollinated should be used. Second, the pollen should have sufficiently high viability to give a satisfactory set of fruit, i.e., 40 to 60 percent of flowers setting normal fruits. Our study of male compatibility with commercial varieties of female was renewed the past spring by testing the pollen of four well-known male date palms: Mitchell No. 1, L. Swingle's "Uncle Henry," Gridley's "King Solomon," and Boyer's No. 11, on Deglet Noor, Khadrawy, Dayri and Ashrasi. Averages of duplicate tests, expressed as percentage of flowers setting fruit, are indicated in the following tabulation:

Female Date Variety	Pollen			
	Swingle	Gridley	Mitchell	Boyer
Deglet Noor.....	67	71	60	66
Khadrawy.....	21	41	38	35
Dayri.....	20	17	11	20
Ashrasi.....	14	--	--	17

"On Deglet Noor good sets of fruit were obtained with all of the four pollens tested. On the other varieties represented in these experiments it is generally considered difficult to obtain sufficient sets and our results this year have not shown any definite superiority for any one of the pollens used.

SUBTROPICAL FRUIT INVESTIGATIONS

Carl L. Crawford, continued.

"Since the females frequently flower slightly ahead of the males, some date growers store pollen from one year to the next to be certain of having pollen of a desirable male date variety available for the early emerging female flowers.

"Our earlier results showed that pollen could be stored satisfactorily at 8°F., while storing at room temperature rendered it inactive. To determine a simpler method of pollen storage than using the 8°F. temperature, which is available only in the larger cities, storage in a household refrigerator (approximately 40°F.) at different humidities was tried during 1939.

"For a basis of comparison, fresh (1940) pollen was applied to four strands on each inflorescence used for testing the stored pollen. Also, since wind-blown pollen fertilizes some flowers in spite of careful bagging, some strands were bagged but not pollinated. The percentage of flowers setting fruit for each lot of pollen at different humidities is shown below:

Relative Humidity (Percent)	1939 pollen			1940 pollen (Fresh)	No pollen
	Held at 8°F. (Percent of fruit set)	Held at 40°F. (Percent of fruit set)	Held in open shed (Percent of fruit set)	(Percent of fruit set)	(Percent of fruit set)
0 ...	60 ...	51 .....	2		
12 ...	--	61	3		
50 ...	56	18	2		
88 ...	--	green mold	green mold		
.....				60	6

"The results indicate that 40°F. storage was as satisfactory commercially as 8°F. for 0 percent and 12 percent relative humidities. However, 50 percent humidity at 40°F. was not satisfactory."

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

Writing Dr. Cullinan on July 22d, he reported: "This week will see the windup of the Elberta season at Fort Valley. Prices for the fruit have been holding up fairly well, but have been getting lower every day as the season advances. Most of our seedlings will have ripened by the end of the week also, with none showing up recently worthy of contesting the place of Elberta.

"You will recall earlier prognostications as to what would happen to peaches where the embryo had been killed by the April 13th freeze? Well, some of them stayed on the trees, and matured at the same time as fruit with live embryos. However, there was a great difference in size. I graded a bushel of Elbertas which I know had a large percentage of dead seeds, and then cracked the pits. Twenty-two percent of the peaches had dead seeds, and all of them were under 2-1/4 inches in size, and more than half of them were under 2 inches. Only 50 percent of the peaches with live seeds were under 2-1/4 inches, and only 12 percent of them were under 2 inches. Sixty percent of the dead-seeded peaches had split pits, compared with 19 percent for the live-seeded peaches. One grower located just west of Fort Valley harvested 4,000 bushels of dead-seeded Hilcy peaches, averaging 1-3/4 to 1-7/8 inches in size, but that represented only a fraction of his potential crop, and was a rare case. From this season's experience, one cannot count very strongly on securing a marketable crop of peaches after the embryos have been killed by late frosts or freezes."

He has written July 20th: "Yesterday was the first day in 18 that it did not rain in Macon, according to the weather bureau. We could have gotten along with a lot less water!"

H. F. Bergman, East Wareham, Mass.

"Early Black cranberries on most bogs are now well past the peak of bloom and appear to be setting well," he writes July 30th. "There is much irregularity in the size of the berries, however, some being two-thirds grown while others are just in flower. Howes are in full bloom on most bogs but are still somewhat delayed on bogs where the water was held late. Many growers are reporting poor set on the Howes...."

"A few blueberries from plantings further inland were picked early this week and were selling at 30 cents per pint. The price of blueberries in this area is seldom more than 40 cents a quart. There is a scarcity of wild blueberries here this year and also less competition from New Jersey berries. Berries in the State Bog are somewhat later than in some other plantings; there will be no berries ripe enough to pick before next week."

## DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman (continued)

"The blooming period of cranberries is very much prolonged this year," he reports under date of July 29th.

"They should have been through flowering about the middle of July and some bogs were, but on others there are still many flowers just coming into bloom. The berries in general are setting poorly but better on Early Black than on Howes. A temperature of around 98°F. on Saturday caused a little scald, particularly in spots where the vines were thin.

"Blueberry picking is now well under way. The Cabot, Pioneer, and Wareham varieties, in most of the plantings, have more berries this year than other varieties although in some plantings there is as large a crop of Rubel as of the other varieties named.

"In general, Concord, Jersey, Rubel and Stanley have a very light crop this year, as these varieties were winter-killed worse than other varieties. Several growers have estimated their crop of berries at about half of that last year. Around Wareham and Middleboro blueberries have been selling at 35 cents per quart, at Marion 40 cents, while at East Sandwich, which is well down the Cape, they have been selling readily at 55 cents."

R. B. Wilcox, Pemberton, N. J.

Writing from the cranberry and blueberry disease laboratory on July 31st he says: "Blueberry fields vary widely in their reaction to the weather. In some places the leaves are drying on the bushes; in other locations there is little visible suffering from drought as yet. But the crop is being ripened very fast and will soon come to a close unless there is a plentiful rainfall very soon.

"Cranberry conditions are fully as variable. Some bogs especially where there are no reservoirs, are already showing severe damage to the vines, and the crop will be cut considerably. A few bogs of late-drawn Howes still showed considerable bloom during the last weekend, but it seems almost certain that many of the flowers which opened during the extremely hot weather of the past few days will fail to set any fruit.

"The relatively dry season has been favorable to the production of sound fruit, but some bogs would probably have set a heavier crop if there had been more abundant rainfall."

## U. S. HORTICULTURAL STATION, MERIDIAN, MISS.

Geo. P. Hoffman (vegetable crops)

"Field crops in this area are generally in a bad way," he reports under date of July 20th. "Cotton and corn are most unpromising because of too much rain, and garden and orchard crops are almost nothing as a result of farmers having to concentrate on those crops usually considered as 'income or farm-supporting crops.'"

"A rainy spell started July 1, and rain was recorded for 14 consecutive days, equaling the previous Weather Bureau record of July 1900 for the greatest number of consecutive rainy days, and considerably exceeding it for total precipitation. The total amount of rain for the two-week period from July 1 to 14, inclusive, 1940, was 13.59 inches. This made it very difficult to do outside work at Meridian, where most of the soil is very light, and was disastrous to many farmers.

"Tomato harvesting was continued in spite of the unfavorable weather. The season and yield were much reduced, but it appears that some very worthwhile differences have been obtained. Selections M/12, M/13 and M/14 continue to hold top place as to plant quality in our variety planting and to be such as to attract wide attention and commendation by growers observing them."

W. H. Loomis (small fruit investigations)

"The first grapes of the season were harvested this week and included Champion, Lucile and Ontario," he reports July 27. "These varieties are about three weeks later than normally and at this date under commercial production would be competing on the market with California grapes. The Champion is the only one of these varieties that does at all well here and it could never be sold profitably in competition with California grapes."

## CHEYENNE HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"Dr. Powers and his crew have been out at 4 o'clock every morning this week to pollinate pumpkins, squashes, and muskmelons," says Dr. Hildreth's report for July 27th. "In addition they have continued to take records on bloom and fruit in the tomato and raspberry plots. Dr. Babb's crew has been irrigating and cultivating in the potato and tomato plots; while part of the crew has been in the office for most of the week working up the data on the pea-filling experiments. Messrs. Scott and Martin of the Bureau of the Budget arrived the last week in June and seemed well satisfied with the report that had been prepared for them; and with the general work of the station. Visitors from the Department and State Experiment Stations have been numerous lately.

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**THIS BELIEVING WORLD!**

In connection with the discussion of Miss McCulloch's work with chloropicrin (tear gas), I have been awaiting an opportunity to pass along to Dr. Jones--probably indirectly, through Ted Dykstra--the suggestion that tear gas might possibly solve the irrigation problem with potatoes during dry spells--assuming that the potatoes were sufficiently mature to have their eyes open. Edmonston ought to try the thing out, I figured.

Figured? That's right, because it's past tense now. I've been frightened out of making the suggestion. A clipping from Dr. M. A. Smith of the fruit disease field laboratory at Columbia, Mo. warns me that it is not safe to jest about such matters. This is a believing world. The clipping tells of the experience of a gardener in the Ozarks, a man who by his own admission had never before attempted to grow anything and who, therefore, claimed no credit for the results he reported at a hotel gathering.

According to the story teller--and I mean story teller!--he planted cantaloups and cucumbers side by side. Honey bees carried pollen from the cucumbers to the cantaloups and vice versa, with the result that this gardener's crop turned out to be neither cantaloups nor cucumbers but cantaloups with cucumbers growing on the sides of them--like handles! The neighbors called them cuculoups.

The gardener planted the seeds from the "cuculops" and agreed, he told his listeners, to allow a Springfield, Mo. grocer to be the exclusive distributor for the new creation.

So what? So one of the listeners, the head of the English department of an Iowa college, immediately wrote a long letter to the head of the agricultural department of her school, telling about the marvelous new cuculoup. Her letter fell into the hands of the school paper, and the teacher became the "goat" of a very interesting story in the summer issue!

Wait--I'm not through yet! Another listener took careful notes of the discussion and prepared a paper on "cuculoups" for her garden club. Other members were sorry for her, but concluded that she must have taken something a trifle stronger than orange juice before listening to the plant breeding story.

All in all, it recalls the heading of another story, in a Marchall (Mo.) paper: "HERE'S A REMARKABLE STORY. YOU MAY THINK I AM A LIAR, BUT I'LL PROVE IT."



## NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Practically the entire week ending July 20th was spent in the field checking on the results of tests of the comparative efficacy of bordeaux mixture and certain 'fixed' copper materials for the control of walnut blight.

"With only a few exceptions, copper oxalate and yellow cuprous oxide gave practically as good control of walnut blight as bordeaux mixture, but copper oxychloride gave consistently poorer results. Thus, in one test carried on in a young Franquette orchard near Eugene, Oreg. two applications each of bordeaux mixture 6-2-100, copper oxalate 4-100, and yellow cuprous oxide 3-100 reduced the incidence of infection from 37 percent to 1.8 percent, 0.6 percent, and 2.7 percent, respectively, whereas the same number of applications of copper oxychloride 3-100 reduced the incidence of infection to 7.3 percent.

"In tests carried on in the Vanderspeck orchard near Sheridan, Oreg. three applications of copper oxalate 3-100 reduced the incidence of infection from 40.8 percent to 4 percent, whereas the same number of applications of bordeaux mixture 6-2-100 reduced the incidence of infection to 5.6 percent.

"In this same orchard there is a very good example of cumulative control of walnut blight. There are a number of trees in this planting which because of their location on a very steep bank have never been sprayed. Of the nuts examined on these particular unsprayed trees, 40.8 percent were found infected, whereas in a plot that was not sprayed this season but was sprayed for four consecutive years previously, only 16.9 percent of the nuts examined were found infected.

"Results of studies on the effect of fertilization on the incidence of walnut blight were also taken during the week. In tests carried on in the T. E. Chambers orchard near Eugene, Oreg. the use of ammonium sulphate or a complete fertilizer at the rate of 500 pounds to the acre had no effect on the incidence of walnut blight. Thus, 32.6 percent of the nuts examined in the ammonium sulphate plot and 36.9 percent of those in the complete fertilizer plot were found to be infected, whereas in the untreated plot 32.7 percent of the nuts were found infected.

"It is planned to continue these experiments over a period of several years as the effects may be cumulative and take several years to manifest themselves.

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"A number of tung orchards were visited this week in company with Mr. A. Machito de Brito, a visitor from Sao Paulo, Brazil," he writes July 27th. "With warm weather and adequate soil moisture from recent rains, the orchards are thriving. The foliage of the trees looks well, the crop is excellent, and the summer cover crops are making excellent growth. Mr. Brito reported that there are 850,000 tung trees within the State of Sao Paulo, but that on the whole they receive less care than in the orchards of the United States of America."

He had written July 20th: "The usual weekly measurements of fruits and shoots of mature tung trees show a sharp decline in growth rate. Apparently both vegetative growth and increase in size of the fruits have about reached the maximum for this season. This would indicate that from now on the energy of the trees will be turned to the filling of the nuts and oil production. Coincident with the cessation in increase in size of the fruits, Dr. McCann has finally dissected out several embryos. They are 4 to 5 mm. long, indicating recent rapid development. In some slides made early in the season, groups of from 16 to 32 cells have been found that may have been resting embryos. It seems certain that development of the embryos is delayed during the period following fertilization when rapid increase in the size of the fruits is taking place.

"A summary of counts in the nursery planted with seed from our 1939 selection shows the percentage germination to range from 6 percent in the case of selection F-194 to 92 percent for selection M-143. The average for the entire lot is slightly better than 70 percent. This is somewhat astonishing in view of the fact that only 48 percent germination was reported from the Cairo laboratory for identical lots of seed from the same trees. It would appear that local weather and soil conditions have a very important bearing on germination. Our nursery was planted in March and there was abundant rainfall in April but May was very dry indeed. A tung tree comes up like a bean, and a considerable proportion reached the 'staple' stage during May, but were unable to pull the cotyledons out of the hard dry soil...

"It is common to find thousands of young tung trees springing up in the orchard where nuts have been missed at harvest time. This caused us to wonder if the nursery might better be planted in the fall than in February and March, as is the usual practice. A test begun last December showed on July 13th a total germination for the plantings made February 20th and March 6th of about 75 percent, whereas in the plantings made last fall or in mid-winter, only about 62 percent germination had been obtained..."

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**NUT INVESTIGATIONS**

Harold M. Sell and Matthew Drosdoff, Gainesville, Fla. (Tung Inv.)

"Samples of tung fruits for the regular two week interval of study on oil formation in the fruits were preserved in alcohol for the determination of carbohydrates and nitrogen," they report for the week of July 22-27. "An analysis gave 4 percent oil in the kernel on a wet basis. This is about 3 percent higher than it was two weeks ago. The shells on the kernels were hard enough to be removed from the kernel and rapid changes have occurred in the structure of the kernel..."

"Quick tests for potash and phosphate are being adapted for use in the fertilizer placement studies. It appears that both the Norfolk and Arredonda soils of the test plots here are well supplied with phosphate; the Arredonda is also high in potash while the Norfolk is very low. The Red Bay fine sandy loam from the Cairo station plots, and the Pheba and Ora sandy loams from the Bogalusa station plots are all very low in both phosphate and potash. Determinations of pH were made on over a hundred soil samples from the fertilizer placement plots."

C. E. Schuster, Corvallis, Oreg.

"We made a trip to The Dalles to make a final check-up on the boron work associated with the zinc work," he writes July 20th.

"Trees treated in 1937 are still in pretty good shape where we used both materials. Peaches that were very much affected with little leaf are still practically 100 percent clear of that. Cherries vary in their reaction apparently according to the degree or amount of little leaf that had developed. Very heavy applications using sulfate alone which carried considerable amounts of boron were sufficient to hold the trees in good shape without any extra boron. Where lighter additions of zinc sulfate were applied with addition of boron in boric acid, it was beneficial."

F. W. Dodge, Shreveport, La.

Writing from the Pecan Field Station at Robson, La. on July 27, he says: "The nuts are rapidly increasing in size, and considerable summer shoot growth is taking place. The extra growth and weight is bringing the tree branches closer together. I have measured several places in the Variety Orchard where the foliage of adjoining trees is two and three feet apart. This means that the trees have made a limb spread of almost fifty feet in ten years, and have reached the point where thinning the stand would probably be advisable."

## ADMINISTRATIVE NOTES

Author! Author! So that authors may follow more closely the progress of their manuscripts through the many intricate steps in the process of editing and preparation for the printer, the Bureau's Division of Information is inaugurating a system whereby the author--or senior author, if there is more than one--will be notified when his manuscript is received in the Division of Information, the amount of work that is ahead of it, and the date on which it finally goes to the printer, together with the series and number assigned to it.

In order to do this, the Division of Information will need to have the correct official mailing address of the senior author. Authors, or their secretaries, should insert this address immediately after the name of the senior author on the green submittal form that must accompany all manuscripts offered for publication in Department series.

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Louis C. C. Krieger The period of intense heat in Washington, D. C. the latter part of July, proved too much for our colleague, Louis C. C. Krieger, who had been in ill health for some time, died July 30th. He was one of the finest botanical artists in the country, and has left a splendid memorial in the remarkably accurate water color illustrations he contributed to our publications, especially to the bulletins on the market diseases of fruits and vegetables; and the vegetable standardization type books.

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Lee C. Corbett Another death that brings sorrow to many veteran workers in the Division and the Bureau generally is that of Dr. Lee C. Corbett, who died July 13, 1940.

Dr. Corbett entered the Department in 1901, and aside from service as Assistant Chief of the Bureau of Plant Industry during 1913 and 1914, devoted his entire official career to forwarding the horticultural interests of the Department. In 1914 when the late Dr. A. V. Stubenrauch, who had been in charge of the combined offices of pomology and horticulture, went to the University of California to head the Division of Pomology there, Dr. Corbett, who had left the Office of Horticulture in 1913 when he became Assistant Chief of the Bureau of Plant Industry, returned to become head of the Office of Horticulture and Pomology. During the years immediately preceding his retirement on January 31, 1938, Dr. Corbett devoted his attention chiefly to research on trends in horticultural industries, including a three months' plant exploration trip to South American in 1937.

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 ADMINISTRATIVE NOTES
 

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Military Leave "Current expansion of the Nation's defense forces has raised the question of the status of employees of the Department who are called for military duty," says a memorandum of July 17th from the Director of Personnel. "There is no legislative or executive requirement that employees who voluntarily go into such service be restored to their civilian positions at the completion of military duty. The Department, however, desires to cooperate in every way possible with the defense program. It shall therefore be the policy of the Department to grant leave without pay to employees who go into military service, either for training or for active duty. Within appropriation limits, such employees shall be restored to their positions upon the completion of military service, provided they are physically and mentally qualified to resume their former duties.

"Because of current restrictions, leave without pay cannot be granted for any purpose for a period in excess of one year, so that military service lasting more than one year cannot at present be included under the policy stated above. However, the Council of Personnel Administration, speaking for all government agencies, is now seeking removal of this time restriction in cases of military service. You will be advised as soon as action is taken in this direction. It should be emphasized that the above policy is applicable to all employees who go into military service, whether or not they are now members of the military and navel reserve forces.

"Your attention is called to paragraphs 1573, 2551-57, and 3214 of the Department Regulations; Personnel Circulars 69 and 85; and Memoranda to Chiefs of Bureaus and Offices numbers P-54, P-79 and P-86 which give other information regarding military service of Department employees."

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Addressing chain or messenger envelopes Arriving home from office a husband was met by his wife, blood in her eye. "I've a letter from Mother," she told him. "She says she's not coming to visit us; that we don't want her. Didn't you write her as I told you, telling her she could come at her convenience?" The husband seemed embarrassed. "I did," he protested, weakly. "But the fact is, I couldn't remember how to spell 'convenience,' so I made it 'risk.'"

The Department's postoffice workers insist that some of us at Washington and Beltsville are just as careless about messenger envelopes--addressing them, I mean. More than 500 such envelopes incompletely addressed were received during a single month recently. Many had to be returned to the senders to complete the address; some are still seeking owners. Please make certain, then, that messenger or chain envelopes bear the name of his Bureau as well as that of the person to whom addressed. It may be well to add Division, office or section where practicable.

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### VOLUNTARY CONTRIBUTIONS TO RETIREMENT FUND

As you know, it is provided in the Act of August 4, 1939, that additional voluntary contributions may be made to the Civil Service Retirement and Disability Fund not to exceed 10 percent of the aggregate annual basic salary received since August 1, 1920. Such contributions, in multiples of \$25, are used to purchase additional annuities when employee reaches retirement age. The money is deposited with interest as prescribed by law, and is refunded only in case of death, retirement, or transfer to a position outside of the Retirement Act. Employees who wish to make such additional contributions should write the Business Office for Form 3471.

In this connection a question has been raised as to whether such voluntary contributions may be withdrawn upon reaching retirement age, instead of being used to purchase an additional annuity. The Acting Comptroller General says not--that such withdrawals would be tantamount to treating the contributions as deposits in a savings account--a purpose that is in nowise manifested in the statute.

### "VUE PAKS" USED FOR COVER GLASSES

A note in Science for July 5, 1940, comments on the fact that as a result of the present conflict in Europe the price of cover glasses used in microscopic studies has risen so much that the question as to how to meet the increase in price has become a serious problem for laboratories using many glasses. There is a widely felt need for a less expensive substitute for imported cover glasses.

The writer in Science has found a solution by using plastic. "We are using cellulose acetate, trade name 'Vue Paks', which can be obtained in sheets 0.005 inch or 0.127 mm thick," he writes, "corresponding approximately to the thickness of cover glass No. 1 which varies between 0.13 mm and 0.14 mm."

--Daily Digest

### COLD AIDS GERMINATION OF POTATO

Dr. C. F. Clark of our section of potato investigations, reports in the American Potato Journal for June, 1940, on his experiments on the longevity of potato seed. Tests were made of potato seed stored for 13 years under four conditions. Those stored at room temperature in an envelope were found to maintain the least viability. Those stored in a bottle at room temperature were slightly more viable. Seed stored at 40°F. showed no decline in viability until after 11 years of storage. A temperature of 32°F. not only prolonged the life of the seed to the end of the thirteenth year storage period, but appeared to have a stimulating effect, since the highest percentages of germination in this lot were obtained during the last five years of the test.

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**RETIREMENTS**

Frank A. Thackery The past month witnessed the retirement of two workers very closely associated in the work of the former office of Crop Physiology and Breeding Investigations, now incorporated in the Division. The first to retire was Frank A. Thackery, who has been located at the U. S. Date Garden, Indio, Calif.

Mr. Thackery completed more than 40 years of outstanding service in the Departments of the Interior and Agriculture. He started with the Indian Service on the Sac and Fox agency in Oklahoma. Some 20 years ago, when we began active cooperation with the Indian Service in connection with the development of fruit and vegetable crops likely to prove of value to the Indians, we drafted him as the best man available to handle the work. Beginning with general horticultural crops on the Pima Indian reservation, with headquarters at Sacation, Ariz., he gradually began to specialize in date growing since this crop offered splendid possibilities as a source of food for the Indians. Of late years he has made his headquarters at the Government Date Garden, Indio, Calif., the center of commercial date growing in the United States, while continuing his active cooperation in the introduction of date growing on the Indian reservations of the Southwest, wherever conditions were suitable. Few white men are better liked and respected by the Indians, or have left a better record of efficient work in their behalf.

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T. Ralph Robinson Mr. Robinson's retirement will not be effective until the end of August. While Mr. Thackery was representing the office of Crop Physiology and Breeding Investigations in the Southwest, Mr. Robinson supervised experiments in Florida and on the Gulf Coast generally, with special reference to the breeding and testing of citrus fruits.

He came to the Bureau back in 1901, and in 1911 resigned to have a try at commercial orange growing in Florida. He made an outstanding success as manager of a large grove but, not entirely happy in commercial work, returned to the Bureau in 1917, and became, as stated, the field representative of the office of Crop Physiology in Florida and the Gulf Coast States. While taking an active part in the breeding and testing work, his outstanding contribution was probably in his ability as a coordinator. With his background of successful commercial orange growing, he spoke the language of the growers, and was able to enlist their whole hearted cooperation--a cooperation that helped vitally in making possible a prompt test under field and grove conditions of promising new hybrids. We hope and expect to utilize his talents in this field for a good many years to come as his retirement means no lessening of his interest in the citrus work, to which he has devoted so many years of his life.

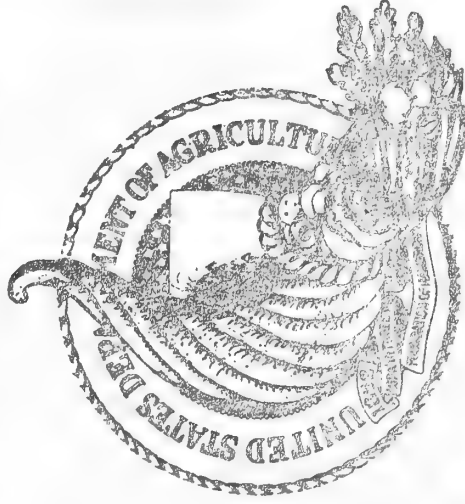
Vol. 12 No. 16

August 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE



THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII

U. S. Horticultural Station, Beltsville, Md.

No. 17

September 1, 1940

The What and How  
of Publications.

"We all know of excellent technical men who complain about the slow movement of their manuscripts through the hands of critics and editors, but who would be astonished, and might be offended if told the truth--that much of the delay results from the very poor preparation of their papers," said a speaker before a scientific meeting some time ago. Of course, there are those who say that the research investigator should be permitted to report his findings in his own sweet way, without the supposed benefits of editorial supervision. They apparently assume that the investigator has the sole responsibility for his publication. He hasn't. The Department has definite obligations and responsibilities also, and its reputation is at stake to a greater or less degree in connection with every publication it sends out. It is the United States Department of Agriculture that speaks in each of its publications, irrespective of who the author may be.

Regardless of whether an investigator has the natural or acquired faculty for good expression in his writing, however, it does not seem unreasonable to expect that he should at least see that the manuscript he submits is complete and accurate, so that the editors will not need to point out invalid or erroneous names of genera, species or varieties; incorrect citations; inaccurate calculations; or lack of agreement between text and tables or illustrations. Government editors usually have little or no say about the acceptance of a manuscript for publication. It is their job to see that it conforms to the accepted standards for Government printing. There are many styles of printing that are sanctioned by good usage, of course, but in an establishment as large as the Government Printing Office, where the work is handled by many different persons, definite rules of printing style must be enforced if we are to have a harmonious and standardized output. Observation of these rules by the author in the preparation of his manuscript will do much to speed its journey to the printer.

As a general rule, copy will be printed in conformity with the Government Printing Office Style Manual, latest edition. We are not in a position to supply copies of this to all who could use it to advantage, but if a copy is not available for your use and cannot be supplied by our Business Office, a satisfactory abridged edition may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. for 25 cents--coin, check, or postal money order; not stamps. Good ideas of style, form and arrangement may be obtained by examining a recent publication in the series to which you propose to contribute.

Farmers' Bulletins should be concise, pertinent statements, in nontechnical style, regarding subjects of broad interest coming properly within the range of our official activities. The primary object of a Farmers' Bulletin is to give directions, rather than to describe or summarize results. Such bulletins should be short, preferably not more than 16 printed pages, though they may exceed this limit where the importance of the material justifies it. Your typist can easily figure out how much of her typed material will fill a printed bulletin page.

Technical Bulletins should contain reports and results of research and experimentation, with supporting data; technical discussions; compilations, etc. They are for specialists as a rule.

Circulars should contain material of a semitechnical nature, intended primarily for special groups, or for limited distribution. They are intermediate between Farmers' Bulletins and Technical Bulletins in the character of their contents.

Leaflets should be concise and popular in nature and must not exceed eight printed pages. They should contain in brief form and simple language information easily understood and readily applied. (Leaflets are usually issued in attractive "stream-lined" form, with illustrated title pages, so that the text is restricted to seven printed pages.)

Miscellaneous Publications are those that do not fall within any of the classes just mentioned, including publications that are to be issued in larger or smaller page size than the usual bulletin.

Journal of Agricultural Research papers are highly technical contributions of limited scope--concise reports containing the essential data and conclusions of original research of direct or indirect importance to agriculture. Historical introductions as well as bibliographies must be held to a minimum and in general the paper should not cover more than twelve printed pages. Miscellaneous Publication No. 3, "Editorial Policy Regarding the Journal of Agricultural Research," contains detailed instructions regarding the preparation of manuscripts for the Journal.

## Popular Publications

Fundamental considerations in the organization of material for a popular bulletin, such as Farmers' Bulletins, Leaflets, and most Circulars and Miscellaneous Publications:

## A. General organization of material:

1. Purpose for which paper is written.
2. Character of material.
  - a. Is the material temporary or permanent?
  - b. Is it to develop some constructive program?
  - c. Is it of historical, theoretical, or practical import?
  - d. What individual problem does it present?
3. Audience to be reached:
  - a. Background: i.e., interests, requirements, etc.
  - b. Personnel: i.e., adults or young people; rural, urban or small-town dwellers; growers; consumers.
4. Study of material:
  - a. Is the material already available; that is, are the facts well known, or has the author discovered something new?
  - b. How important is the material?
  - c. What is the interest--general or special?
  - d. How adaptable or suitable is the material to the audience?

## B. Technique of presentation:

1. The title should attract interest but should not be misleading; should adequately reflect and indicate the contents of the paper and should be as brief as is consistent with clarity. It is well to consider its suitability for indexing--so that the index or library reference can indicate what the paper is about.
2. Outline or arrangement of material:
  - a. Material should be studied carefully for logical sequence and order of presentation. It should be prepared with the reader in mind and new or unusual terms should be explained.
  - b. Headings and subheadings should be selected with care as to whether they should be nounal, participial, or verbal in nature; and when possible they should be made uniform throughout the paper. There should be a close and definite relation or connection between heading and text, and coordinating headings should be of equal importance. All headings must be clear, concise, brief, expressive and understandable.
  - c. A consistent use of tenses should be maintained, as this is essential to clearness of presentation.
  - d. Strictly popular material should be brief and to the point, and usually does not need a summary.

3. Illustrations are particularly important in popular and semi-popular material and should be selected with care. Only prints with clear contrasts that will reproduce well, and those that tell a story and definitely assist in the presentation of the subject should be used. Material to be presented in the form of graphs should be studied carefully. Discontinuous functions, variations, or relations are illustrated by bars; continuous or progressive variations by curves.
4. Tabular material ordinarily has no place in a strictly popular bulletin.

#### Technical Publications

Fundamental considerations in the organization of material for a technical paper--Journal of Agricultural Research, Technical Bulletin, and some Circulars and Miscellaneous Publications:

- A. The technical paper should be based on research and carry adequate supporting data, and should be made as readable as the character of the subject permits.
- B. The title should be as brief as practicable to describe the paper accurately; and should be one that will index satisfactorily.
- C. Parts of a paper:
  1. Introduction, explaining why the work discussed was undertaken.
  2. Review of literature, brief, but to include relevant material.
  3. Material and methods, telling of materials, apparatus and methods used, and conditions under which work was done.
  4. Presentation of data or results, setting forth in logical order the facts or data brought out in the investigation. If the material is brief and simple, a single heading may suffice; if complex, appropriate headings and subheadings will aid the reader. The interpretation or discussion of results may sometimes be placed advantageously under a separate heading. If it is found necessary to set up a separate section for discussion, this may be either speculative or philosophical.
  5. Conclusion and summary.--Certain papers require the inclusion of a separate section giving the writer's conclusions. This section should set forth the inferences and deductions drawn from the experiments, and should include only those inferences and deductions for which a basis has been stated in the text, and should not forecast proposed investigations or publications. The substance of the entire paper should be given concisely in the summary, which should contain only material already set forth in the text, and should not state the case more sweepingly than does the text, nor forecast proposed investigations or publications.

6. Literature cited. Detailed instructions are given in "Citations to Literature in the Journal of Agricultural Research, Technical Bulletins, Circulars, and Miscellaneous Publications (Other than Bibliographies)" by Carolyn Whitlock of the Department's Office of Information.

In general, where there are seven or more references they are listed on sheets to be placed at the end of the manuscript. The references are listed in alphabetical order by author, and chronologically under author. A smaller number of citations (six or less) should be in footnotes. All unpublished material such as mimeographed, multigraphed, or typewritten matter, should be cited as footnotes. Citations are typed double space for ease in marking for the printer and for making any corrections that may be necessary. Preferably, titles should be typed in small letters (lower case) so that they may be more easily marked for small capitals. The approved form for listing citations is

(1) Doe, John Q.

1939. the work of the division of fruit and vegetable  
crops and diseases. Amer. Pomol. Soc. Proc.  
(1938) 84:117-23.

7. Illustrations should show with unmistakable clearness the points to be illustrated, and the legends should help bring out these points. Do not furnish detailed drawings of huge size and expect all details to show when they are reduced to fit the bulletin page. Drawings should be about two or three times the size of the printed reproduction. Photographs should be attached to the 8 x 10 1/2 sheets by inserting their corners in slits cut in the sheet. Do not paste, clip, or pin photographs to the sheet.

D. Study of material:

1. The paper as a whole should be gone over with care with a view to deleting words or even sections that may be omitted without impairing its clarity or adequacy.
2. Material that is commonly known should not be included.
3. Criticisms of others should be restricted to comments on the accuracy of their work.
4. Detailed discussion of figures and tables, unless interpretative, should not be included. The mere repetition or restatement in the text of data shown plainly in the tables, without pointing out significant relationships, should be avoided.
5. Tabular matter should be checked carefully against the text to make certain that there are no discrepancies between statements and figures.

## Nomenclature

The Secretary of Agriculture has formally approved a recommendation of the Department Committee on Plant Names, endorsed by the chiefs of the Bureau of Plant Industry, Forest Service, and Soil Conservation Service, to put the Department, botanically speaking, under the International Rules of Nomenclature. Therefore these rules are official for the Bureau of Plant Industry publications, reports and correspondence involving scientific plant names. The systematic botany investigations of the Bureau, so far as flowering plants are concerned, are centered in the Division of Plant Exploration and Introduction, and that Division will cooperate with our workers to the extent of checking lists of scientific and common plant names in manuscripts, or furnishing such data on request so that we can conform with the new ruling on nomenclature. The Division of Mycology and Disease Survey will cooperate with regard to the nomenclature of fungi.

## Authorities

The Government Printing Office Style Manual, latest edition, is the general authority in connection with printing our publications.

Webster's New International Dictionary, current edition, is followed in spelling, compounding, and dividing words, except where deviations therefrom are authorized in the Style Manual.

When a plant name is not given in the Style Manual, the best available authority should be consulted. "Standardized Plant Names" is the general authority for compounding and spelling common names of plants.

The following authorities, in the order given, govern the spelling of geographic names: Decisions of the United States Board of Geographical Names; United States Postal Guide, for names in the United States; International Postal Guide (Dictionnaire des Bureaux de Poste), for foreign names; Lippincott's Gazetteer of the World; New World Loose Leaf Atlas (Hammond), and Rand, McNally & Co's Atlas.

## Geographical Areas

Region is used for geographic divisions of groups of States, as North Atlantic, North Central, the Mississippi Valley, Rocky Mountain, or Pacific Coast region; the Corn Belt, Cotton Belt, or Great Plains. Area is used for geographic or physical divisions of one or more States and of less extent than a region, as Coastal Plain, Mississippi Delta, or spring wheat area. Section covers parts of a State or States, as the Upper Peninsula of Michigan, the black prairie section of Texas, the Eastern Shore, or the Shenandoah apple section. District is part of a State, as the apple-growing district of western New York, the Adirondack district of New York, or the Black Hills. Locality is used to designate a town or part of a county.

## Tables

Tables should be typed on separate sheets as they are handled separately at the Government Printing Office. Do not put different units in the same column unless the unit designation is placed in the stub instead of at the head of a column. In figure columns zero should be used to denote negative results of experimentation or the fact that data are available but the quantity or number is zero. Leaders (...) should be used to denote absence of experimentation or data. Tables should read across and should consist usually of three or more columns and two or more lines. The more essential material should go in columns to the right. The heading should be brief but comprehensive. Box heads should also be brief, and usually the unit of measure should be placed at the head of the column rather than in the box head. Footnotes should be typed at the bottom of the table and all footnote references should be placed from left to right and not down the column. Footnotes to tables are numbered for each table separately.

### Citations, Computations, General Footnotes, Appendix

All computations and citations should be verified carefully. The full scientific name, with authority, should be given the first time it appears and may be given again in the summary. Footnotes should be kept to a minimum and numbered consecutively from 1 onward through the manuscript. An appendix is rarely necessary in our publications, but if one is supplied the following directions should be observed: (a) Matter that is supplementary is placed in the appendix; (b) tables that contain data not essential to the text, and tables in great detail and not of interest to all readers should go there; (c) table and footnote references to the appendix are numbered consecutively with those in the general text; and (d) the appendix follows "Literature Cited."

### Reviewing and Initialing

It has long been the practice of the Bureau to require that all manuscripts submitted for publication be critically reviewed and revised where necessary by some one familiar with the subject matter. This review should be obtained by the author before he submits his manuscript for publication, thus avoiding the delay that occurs when the head of the Division or Chief of Bureau must refer the manuscript to some specialist for reading and comment. Where the manuscript touches on the work of another Bureau or is in cooperation with a State experiment station the author should obtain the approval of that agency for its publication before sending it in for editing. The initials of the reviewer, section leader, and other readers should appear on the manuscript itself, not on the letter of transmittal or reference slip. Where there are two or more authors, one of them should assemble and review the material, thereby producing a complete, finished manuscript, to be initialed by all in its final form.

### Forwarding the Manuscript

All manuscripts intended for publication in one of the Department's series must be accompanied by the green "Manuscript Submitted for Publication" form, filled out and signed by the senior author, or by his section leader for him. The form should contain the official mailing address of the senior author so that the Bureau's Division of Information may send him a notification card informing him as to the progress of the manuscript toward the printer. An original and one carbon copy is needed of manuscripts for publication in the Department's series.

A table of contents should also be supplied, and a list of illustrations, if any. Submit an extra carbon copy of the list of illustrations noting in pencil or otherwise beside each legend the location of the negative from which the illustration was made. This marked list is filed in our photographic section at Beltsville so that we may locate negatives promptly when additional prints are needed. As a matter of fact, the negatives should be transmitted with the manuscript for filing at Beltsville. We have frequent requests for prints of illustrations in our bulletins and it causes loss of time and considerable irritation where we have to send to some distant field station, for example, for negatives or prints.

### Mailing Lists

While mailing lists have been curtailed, there are still a few that may be useful in distributing your bulletin. The Bureau's Division of Information will help you go over existing lists and select those likely to be useful, inserting their "key numbers" on the green submittal form. Incidentally, if you have a list of persons who have requested the bulletin when issued, have un gummed franks typed for these persons, the name of our Division being stamped on the back of each frank. List these on the green submittal form: "         addressed franks being held subject to call." The franks will be called for when your manuscript goes to the Office of Information.

While on the subject of mailing lists, it may be well to say that ordinarily a letter to the Bureau's Division of Information will be sufficient to have a name placed on a mailing list--No. 377 (Monthly List of Publications); 481 (to receive announcement slips for Journal of Agricultural Research separates); etc. Where practicable, however, send the Division of Information the usual card forms--AD-79 (buff) to add names; Dept. 77 (green) to drop names from list. If you desire an address changed you send two cards--one dropping name from old list, the other adding the new address. If you do not know the name of the mailing list, you can usually find it (the key number) on the wrapper in which the publication is received.

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REPAIRING TORN SHEETS.--Stick the "Scotch tape" or other mending tissue to the back of the sheet; not on the front, since it is not possible for editors to make notes or corrections on it.



## Journal of Agricultural Research

Manuscripts intended for publication in the Journal of Agricultural Research are submitted tentatively and if acceptable are returned to the Bureau for detailed editing. While the Journal's Editorial Committee understands that manuscripts will be carefully edited later, it will undoubtedly be influenced in its acceptance or rejection by the condition of the manuscript as originally presented.

## Reading and Initialing Proof

With its limited staff, the major attention of the Division's editorial section must be given to a consideration of subject matter. Thus responsibility for reading and correcting proof is placed definitely on the author. Proof should be read carefully, compared with the original manuscript in the case of galley proof and with the galley in the case of page proof, initialed and returned promptly with all accompanying papers. Occasionally proof comes back marked up but with nothing to show who did the reading and correcting. Care is necessary with page proof to avoid errors in paging and the insertion of illustrations. Corrections should be made on the margins of the proof opposite the errors to be corrected. Do not write over the print or between lines of print. As no page proof of Journal of Agricultural Research papers is sent to the author, especially care is necessary in correcting the galley proof.

## Reprints, Separates and Reserves

Reprints of papers appearing in the Journal of Agricultural Research are not available as a rule until a month or more after the appearance of the Journal. No reprints are available for general free distribution. The Bureau receives 250 reprints, of which 10 are held as a reserve, a few used for a very limited foreign distribution, and the others sent to the Division. After copies are taken for the Beltsville Library and our reference sets, the other copies go to the section leader who usually reserves 30 to 25 copies and divides the others among the authors. Thus requests for separates should be sent to the author--or to the Superintendent of Documents, Government Printing Office, Washington, D. C., who prints additional copies for sale (usually at 5 cents each) when the advance demand, as shown by the return of the notification slips he mails out, makes this desirable.

For all other publications except Farmers' Bulletins and Leaflets, 250 copies are deposited for future use in the Department--50 with the Office of Information; 100 with the Bureau's Division of Information; and 100 with the Division. Of our 100 copies all except a few for reference sets and the Beltsville library are sent to the section leader who reserves a few for his files and turns the others over to the author. These Division copies must be guarded carefully so that copies of the bulletin may be available when the general supply is exhausted. Any special distributions desired at the time the bulletin is issued should be indicated on the green manuscript submittal form, and franks or addressed bulletin (about 7 x 10 inches) envelopes submitted for any persons not on regular mailing lists, so that such distribution can be made from the supply at the Government Printing Office.

## Material on Insect Control

It is often of advantage to the grower to have in the same bulletin information regarding the control of both diseases and insects affecting the crop plant, particularly where fungicides and insecticides may be combined in the control measures that are recommended. If the publication is devoted to the diseases of some crop, without cultural information, it is only logical to include in it information regarding the control of the common insects affecting the crop. This applies, of course, to our popular bulletins intended specifically for the aid and information of the grower, and does not usually apply to monographic studies or technical papers.

We have found that the Bureau of Entomology and Plant Quarantine is quite willing to cooperate in the preparation of material on insect control to be included in our bulletins. Consider, then, whether such material is desirable in the bulletin you are preparing. If it is, discuss the matter with the Bureau of Entomology and Plant Quarantine workers who handle the investigations on the particular insect pests concerned, and arrange to have them prepare or cooperate in the preparation of the necessary paragraphs or chapters on insect control, credit to be given in the usual manner.

### Mimeographed Papers

It is sometimes desirable to prepare mimeographed "briefs" or perhaps form letters for use in replying to inquiries. In fact, when 10 or more inquiries concerning the same subject are received each week it is well to consider whether a form letter or mimeographed "brief" could not be prepared to simplify handling the inquiries. The Bureau's Division of Information will be glad to assist in the preparation of such material. Orders for mimeographing will go through our Business Office as in the past, being prepared (an original and three carbon copies) on the new AD-72 order form. Stencils and keyboard rolls will now be filed in the Division of Information, however, which will supervise all orders. Whenever a new edition is to be run off, the author will be given an opportunity to make any needed revision. Where desirable to prevent listing in the Superintendent of Documents' catalogue, with resulting inquiries from the general public for copies, mark the first page of mimeograph copy, "confidential," or "for administrative use."

The Bureau's Division of Information is glad to help in connection with publications and related matters and has recently taken over the routine miscellaneous correspondence concerning our publications and work. The assistance it offers in connection with the preparation of informal mimeographed "briefs" is merely a part of the new program designed to build up a more friendly cooperation with outside editors and writers who come to us for information; as well as to make possible prompt and helpful answers to inquiries from the general public.

## Preparation of the Manuscript

Manuscripts should be typed on 8x10 1/2 inch sheets of good bond paper. Typed on thin paper they are difficult to handle and read and editorial corrections do not show clearly. Leave a margin of about an inch all around the page. Furnish an original and one carbon copy of manuscripts offered for publication in a Department series. For outside publication we need an original and two carbon copies of the manuscript, the first carbon (for the Office of Information) to be on yellow sulphite paper--Stock 290.

All text matter, legends, footnotes, and literature citations should be typed double space. Footnotes may be typed at the bottom of the sheet, just as they appear on the printed page; or they may be typed immediately below the reference to them in the text, and set off by lines above and below them. 1/

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1/ Footnotes are numbered with superior figures, as 5/. Text references to Literature Cited should be underscored to denote italics, and should be enclosed in parentheses, as (20). In the list of literature citations itself, however, the figures should be enclosed in parentheses but are not underscored, as (20).

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Begin each page with a paragraph. At the Government Printing Office the manuscript will be divided among a number of typesetting machine operators, a few pages to each. It is necessary, therefore, that each page of the manuscript begin with a paragraph; that is to say, no paragraph is to be broken at the bottom of a sheet with a portion of it running over to the second page. Occasionally a paragraph too long to be completed on the page, may be squeezed on by typing the last few lines single space. If a paragraph is too long, and cannot be broken into shorter paragraphs without destroying the continuity of thought, type it on two sheets and paste them together so that the paragraph will be complete on a single (pasted) sheet.

The table of contents (for printing) for all manuscripts except those intended for the Journal of Agricultural Research, should as a general rule contain all first and second headings, the latter indented four spaces. Departure from this rule may be made if there are very many headings, when only those of the first series need be shown; or if there are only a few headings, all may be shown. (A second table of contents should also be supplied, for the guidance of editors and not for printing, showing proper relationship of all headings.)

Legends for text figures should be typed in the manuscript immediately following the first reference to the figure (and be sure that all figures are actually referred to somewhere in the text in numerical sequence!), set off from the text by lines above and below as in the footnote illustration above.

Legends for plates are typed on separate sheets. The photographs or other illustrations are attached to these sheets by inserting their corners in slits cut in the sheet, never by pasting, pinning, or otherwise fastening the photographs to the sheet. The title of the manuscript and the figure or plate number should be written lightly on the back of the photograph or illustration, never typed. The title of the manuscript should be typed in the upper lefthand corner of the sheet, and the legend typed just below the illustration.

Illustrations should be numbered with Arabic numerals (plates and text figures separately) in the order of their mention in the text. They should be grouped at the end of the text with a list of all legends (both figure and plate) and should not be sprinkled throughout the manuscript. When two or more illustrations are grouped in one plate or figure, the parts should be designated A, B, C (not Figures 1, 2, 3). Further subdivisions should be marked a, b, c. To save space, reference letters may sometimes be placed in parantheses, as "Percentage of base saturation (A) and ph value (B) of ..."

Lettering on the face of illustrations should be done lightly in pencil and the final lettering left for the experts in the Section of Illustration of the Office of Information. In the case of charts or graphs, the usual practice is to submit a sketch in pencil showing the layout, the Section of Illustrations turning out the finished job.

#### Photographs

We receive frequent requests from outside journals, book publishers and individuals for prints from illustrations used in our bulletins. This makes it desirable that all the negatives of published material be filed in our photographic section at Beltsville so that prints may be made promptly when needed. Ordinarily the negatives should be sent along with the manuscript. Where this cannot be done, as when a photograph is from a negative not our own, the author should indicate clearly on the extra list of illustrations submitted for our photographic section the exact location of the negative so that it may be located promptly when needed.

We are permitted to supply prints without charge in limited numbers, where they are to be used in the public interest. Where a considerable number are requested, or there is some technical difficulty that will increase the cost considerably, we send the negatives to the Office of Information which supplies the prints desired and makes a nominal charge for them.

The Bureau's Division of Information is already taking steps to make available more satisfactory pictures--action photographs as contrasted with the usual record photographs taken in connection with our work, but for a while we must still depend on the supply of photographs already in existence; especially those used in our publications.

In a recent memorandum to heads of Divisions, Dr. Auchter says: "All of us have witnessed a tremendous increase in the use of pictures in newspapers and magazines in recent years. Some of the agencies of the Department have taken advantage of this trend and equipped themselves with excellent collections of photographs that portray their work. In my opinion our Bureau has missed many good opportunities to explain its work to the public, because we have not had the necessary photographs or because we have not had the right kind of photographs.

"Planning, making, and looking after the distribution of story-telling photographs is a time-consuming job. Now, for the first time, our Bureau has a central clearing house for this type of work. I refer to the Division of Information. Already Mr. Moore has made a start in getting series of related photographs that illustrate various lines of work in the Bureau. One of these sets has received nationwide distribution and several others are in preparation now. He reports excellent cooperation in this activity, but it will be some time before he can assemble enough new photographs to take care of the legitimate requests that come to the Bureau. In the meantime we will have to depend upon photographs already in existence in the various Divisions..."

Ordinarily, we supply only photographs that have been used in our publications, but it is permissible to furnish those that have not been published, care being taken of course not to supply any that are likely to be needed for our own publications. All photographs should be submitted to your section leader so that he may obtain the necessary permission for sending them out.

The Bureau will in future follow the Department policy in the matter of credit lines for any of its photographs used in outside publications; that is, a simple statement "Photo by Bureau of Plant Industry, U.S.D.A." will be all that is necessary.

We are sometimes criticized for sending out photographs without satisfactory descriptions. Be sure, then, that any photographs submitted for outside use are accompanied by clear descriptive legends. Do not type the descriptions on the back of the photographs. Either attach the pictures to sheets as you would for publication, or paste to their edges slips containing the necessary typed description.

The provisions sketched represent the general policy of the Bureau at present in connection with supplying photographs to publications or individuals who wish to use them in bulletins, newspapers or magazines. As a rule we will not supply photographs to firms or individuals who make collections for sales stock. And the Bureau will not supply photographs when it is known that they will be used (in advertising or otherwise) to create the impression that the Department is endorsing some commercial product, or for any other purpose that might prove embarrassing to the Department.

### Manuscripts for Outside Publication

Manuscripts intended for publication in outside journals; radio talks, lectures, and even informal talks before growers should be sent to your section leader so that he may obtain official approval. This is desirable even where it is to be on informal talk, not for publication. Submit an original and two carbon copies of such papers, the first carbon copy (for the Office of Information) to be on what is known as yellow sulphite paper (Government Printing Office stock No. 290), as it receives a good bit of handling. The other carbon should be on the usual thin white paper.

To ensure proper credit, use the standard heading: "Transplanting Large Fruit Trees. By John Q. Doe, specialist, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture." If the manuscript touches on the work of another Bureau, or is a joint contribution from a State experiment station, the author should obtain the approval of that agency (initials, letter of approval, etc.) before submitting the paper. Make certain that the manuscript is sent in early enough to permit subject matter editing and reviewing by head of Division and Chief of Bureau. As with Department publications, the manuscript should be read and initialed by some qualified person familiar with the subject, as well as by the head of your section, in advance of its submittal.

When approved, the original manuscript and the approval notice are sent to your section leader for transmittal to you with any desired comments and suggestions. Telegraphic approval is usually undesirable as it is seldom practicable to indicate in a telegram the changes considered necessary in the manuscript. While no agreement concerning publication is to be made until the manuscript has been approved by the Chief of Bureau, there is no objection to a preliminary discussion with editors; in fact, the request for approval of publication should indicate the journal in which the paper is to be printed. The Bureau of Plant Industry Library should be notified when the paper is published, and a reprint supplied if practicable, so that it may be indexed and mention made of it in "Agricultural Library Notes." As papers for publication in outside journals are usually supplied free, the publisher should be requested, at the time the manuscript is submitted to him, to arrange to furnish free any reprints that will be needed. We are permitted to purchase reprints, of course, but in limited numbers (200 or less as a rule), and only where funds are available, this latter is important as such reprints are paid for from the printing fund (always limited) instead of from general research appropriations.

### The Plant Disease Reporter

Approval of papers for publication in the Plant Disease Reporter, Bureau of Plant Industry, is requested on the special form available from the office of the Assistant Chief of Bureau. Submit an original and one carbon copy (on thin white paper) of the manuscript. Of the approval form, an original, one green and one white carbon on the printed form, and one carbon copy on plain thin white paper should be furnished.

## Distributing Publications

You will save time for yourself and trouble for us by writing direct to the issuing office for publications you wish. If you need a State experiment station bulletin, usually the quickest way to get it is to write to the station's publication office. If it is a Bureau of Standards publication, an appeal for a copy, for official use, will ordinarily get results. Yearbooks? We never have sufficient copies to supply our leading specialists. Usually copies may be obtained from your Representative or from one of the Senators from your State.

Orders for Department publications go to the Division of Information, Bureau of Plant Industry. Where 7 or less (any kind) are ordered, all that is needed is an addressed franked envelope (about 7 x 10 1/2 inches) with the publications listed on its inside flap: "Farmers' Bulletin 1211, 1 copy; Leaflet 173, 2 copies; Circular 517, 1 copy," series, number and numerical order as indicated. Place your initials on this flap and also stamp or type on it the name of our Division so that the envelope may be returned to you if misdirected or the publications requested are not available. So far as practicable, check to see if a publication is actually available before you order it! It is useless, for example, to order Bureau of Plant Industry Bulletins or Circulars, Department Circulars (the old series; the present series is called Circulars, not Department Circulars), or Department Bulletins, as they are no longer available.

Where 8 or more publications are to be sent, use order forms-- Form 75, white, for Farmers' Bulletins and Leaflets; Form 74, blue, for all other publications. Supply addressed envelopes or un gummed franks for mailing these. The name of the Division is stamped on the back of the franks, on the inside flap of the envelopes, and on the front of the order form. The order form should be initialed by the person ordering. Where publications are being sent at the request of a Congressman, use the Congressional order form so that the Office of Information may charge the publications to the Congressman's quota. The maximum number of copies of a publication that may be sent to a Washington, D. C. address (and Beltsville is considered in the Washington area) is 50 on a single order; more may be sent to a field station or to a collaborator. Where 25 or more are sent a note of explanation as to need is required.

With foreign addresses, the orders are prepared on Form 81 (original) and 81-a (duplicate) and sent to the Business Office so that postage may be provided. Use the 4x5 foreign frank, and be sure to supply enough franks or envelopes to take care of the publications ordered. If the publications can be supplied by the Government Printing Office they need not be sent with the order; if available only in your office, send them and note on order form "herewith". Where the same bulletin is being sent to a number of persons (here or abroad) but one order form is necessary. Type on it: "To the \_\_\_ persons listed on accompanying franks..."

Vol. 12 No. 17

September 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE



THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
September 15, 1940

No. 18

Teamwork Dr. Joseph S. Caldwell tells us that he welcomes the "cuculope," the cantaloup with handles, jocularly discussed in the August 15th News Letter. He says that as a retail purchaser of cantaloups he feels that the provision of a handle is a boon; he can get considerably greater distance when he throws them away after discovering that they won't be ripe for at least two weeks!

In the same mail with his note came an advance copy of Technical Bulletin No. 730, "Market Quality and Condition of California Cantaloups as Influenced by Maturity, Handling, and Precooling," by W. T. Pentzer and James S. Wiant of our Division; and John H. MacGillivray of the California Agricultural Experiment Station. This bulletin proves that handles on cantaloups are unnecessary.

Too, it provides an excellent illustration of the effective teamwork of our staff. For years the California cantaloup growers have been battling with powdery mildew. At one time it seemed that the industry would be destroyed as the disease compelled the picking of standard sorts earlier and earlier, so green that consumers had about decided that it was no longer possible to buy really good melons. Our plant breeders, in cooperation with specialists of the California Experiment Station, helped out the situation by producing mildew-resistant cantaloups. One of these, Powdery Mildew Resistant Cantaloup No. 45, is given especial space in the bulletin, and it is easy to see what a vital part the handling, transportation and storage specialists had in its success. They demonstrated that the cantaloups could be allowed to reach full maturity on the vine and then by proper precooling and transit refrigeration be shipped to New York City and remain in good condition long enough for all trade demands!

## NUT INVESTIGATIONS

George M. Bahrt, Fairhope, Ala. (Tung investigations)

"During the past week a suggestive outline was made for the tung investigations, which included manganese, magnesium, iron, zinc, copper, and boron, to be applied to the soil separately or in composite groups, with and without a complete fertilizer," he writes August 17th. "A spraying program suggesting the same elements to be applied to the tree in the form of a spray was also made up. The outline also included treatments where the nitrogen, phosphorus and potassium were to be applied in varying ratios as well as applications omitting each from the fertilizer."

"A map has been made of a 100-acre area in the Baldwin tung orchard, showing location of all trees in the area and indicating the cold spots, lakes and ponds. This is preliminary to deciding on the most favorable and uniform part on which to conduct experiments. Observations were made on the oldest tung trees in Alabama, set about 1908, southeast of Fairhope. The largest is 30 to 35 feet high with a trunk diameter of about 20 inches. It is in excellent condition and showed no signs of cold injury...In visiting tung orchards near Fairhope, Citronelle, Irvington and St. Elmo, Alabama; and Lucedale, vicinity of Lucedale and Richton, Miss., observations were made of the limbs in regard to the amount of fruit that could be supported without breaking the limb. The position of the limbs was taken into consideration also, and the limbs nearest the ground broke from the weight of the fruit as readily as did those higher up. Tung trees but 1-1/2 years of age had already attained a height of about seven feet. Most of the trees showed cold injury but were recovering. The bronzed leaf was common in some orchards as were several leaf patterns that were distinctively different. Leaf patterns were noticed on the cover crop with the pattern denoting a deficiency of magnesium as the most prominent marking."

Ralph H. Sharpe, Cairo, Ga.

"We have been marking all of our budded tung trees so that no mistakes will be made in identification," he writes August 17th.

"Routine work for the week included growth measurements of several seedling populations in our nursery. Analysis of variance of growth gains indicates that certain progenies are growing much faster than others. It might be of interest to note that two of the fastest gaining progenies are from trees that were all-female this year."

"The monthly recording of longitudinal and transverse measurements of fruit on adjusted leaf area tests were made this week. Noticeably larger fruits are still evident on the branches with the greater leaf area."

## NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla.

"Excavations were completed by Dr. Drosdoff and his helpers on root systems of an eleven year old tung tree," he writes on August 31st. "When the total weights of tops and roots were compared, it was found that they were almost equal (213 lbs. and 200 lbs. respectively) in the case of this tree growing on a Norfolk fine sandy type of soil. The leaves weighed about 27 pounds and the fruit 78 pounds. All of the above is on a fresh weight basis."

He had written August 19th: "Dr. Drosdoff reports very promising results of quick tests on the potassium content of the tung trees as related to that of the soil upon which they are growing, through the use of the leaf petioles. Use of the leaves for this purpose was prevented by the large amount of interfering chlorophyll present. This quick test must, of course, be checked by the routine chemical procedures, but it does seem indicative that tung trees growing upon soils low in potassium had a low potassium content in the petioles of their leaves; whereas, quick tests of petioles from tung trees growing on soils high in potassium indicated a high potassium content."

"During the latter part of the week weights of fruit, leaves, and top of an eleven year old tung tree were obtained by Dr. Drosdoff and his helpers. The excavation of the root system was also started. The purpose of the study was to determine the total quantity of the various mineral elements contained in a tung tree of that age. From the information obtained and by estimating the quantities utilized in previous fruit crops and leaf development, an approximation of the total amount of each element required to date will be made. To date this much needed information, upon which to base our fertilizer recommendations in the case of tung trees, is not available."

And earlier report from Dr. Sell stated: "Some time was spent relabeling the fruits resulting from the pollination program this spring. In all of our pollination work the pollen was removed from the flowers and stored in open trays. A 37 percent set of fruit was obtained with such pollen 2 days old; 17 percent from that 3 days old; and practically zero percent with pollen older than 3 days. In rather limited trials with pollen stored in flowers, a fair set was obtained with 4 day old pollen, but no set with 5 day old material."

"The oil determinations of samples from Lamont were finished several weeks ago and, according to Dr. Potter's calculations and statistics, no significant difference can be attached to oil content from fruits taken from limbs having 3, 6 and 12 leaves, respectively."

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"This week Dr. Cook, who has been assisting Dr. McCann in the histological laboratory, brought his work to a close in time for a few days vacation before returning to duty at Louisiana State University," he reports for the week ending August 23d.

"During the last three months he has dissected and traced the blossom bud formation in well over a thousand terminal buds from tung orchards in Mississippi and Louisiana. Practically none of the buds collected late in May showed even the earliest stages of initiation, but evidence of the terminal flower could be seen in nearly all of those collected after about June 15. By mid August the terminal blossoms in from a quarter to a half of the buds were in a rather advanced stages of development. We expect to continue to make collections until all the buds of each collection show advanced development...

"Mr. Hines has located an abandoned orchard of mature tung trees, well isolated and very suitable for experiments with diseases. This week he inoculated 80 of the trees with organisms isolated from the crotch canker found near Covington, La. An outbreak of 'thread blight' was discovered this week in the orchard at Lampton Ranch, Varnado, La. This disease, caused by the organism Corticium Stevensii, has heretofore been reported on tung trees only in Florida."

## PECAN CROP TO BE FAIR DESPITE BAD STORM LOSS

A newspaper clipping from Dr. John R. Cole of the U. S. Pecan Disease Field Laboratory at Albany, Ga. states that Mr. J. B. Brewton, manager of the Georgia pecan auctions, Vidalia, Ga., has completed a survey of the damage caused to the Georgia papershell pecan crop by the hurricane of August 11.

"Summing up, it appears that the general damage in the pecan belt will run to between 25 and 50 percent, but on account of the good crop set on trees this season, there will be a fair crop of nuts for the market," he predicts.

"The worst part of the storm hit the section running up the State through Millen, in Jenkins, and through Burke County, taking a group of northeast border counties where pecan damage is said to have been in excess of 50 percent.

The Georgia Auctions will open the selling season at Vidalia, Ga. on October 23, according to the clipping.

## NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on August 24th, he says: "The shells of almost all varieties are hard to the base. Schley nuts are hard for about half their length and are still dropping to some extent. General reports from most sections of the State indicate that nut drop has not been particularly severe in Georgia this year and partly for this reason the crop prospects are somewhat better than indicated in the spring. As usually happens about this time of the year, as the nuts become larger and more readily seen, many growers are increasing their estimates of the size of their crops. Our crop at Philema still appears to be very light.

"The chestnut harvest will probably start about the first of next week. This date is about three weeks later than in 1939 when the harvest started on August 3d."

He had written August 17th: "Orchards have been visited both north and south of Albany. As reported previously, there will be a relatively light crop south of Albany...In the sections of the State north of Albany, from the Alabama line eastward, the trees are generally bearing large crops...It is the opinion now that north central Georgia will probably produce its biggest crop unless adverse conditions develop between now and harvest. With south Georgia producing a light crop the total for the State should be about the same as last year, approximately eight million pounds."

B. G. Sitton, Shreveport, La.

"The wind accompanying the tropical storm that hit the Gulf Coast last week caused a heavy drop of pecans in this territory," he reports August 17th. "Four trees in the wide spaced block were selected as having a representative number of pecans on the ground. All of the pecans on a one-eighth sector under the four trees were counted. There was an average of 2062 pecans under these four trees. This would represent from 45 to 50 pounds of pecans if they had matured and filled properly. However there are still many pecans on the trees, apparently more than the trees can mature properly. I estimated the crop still on the tree that had the greater drop as being close to 300 pounds and to look at the tree there did not seem to have been room for those pecans on the ground.

"The pecans on the trees appear to be much smaller than usual for this time of the year. This is probably the result of the heavy crop and the deficiency in sunshine this year. The apex of the shells of the pecans are hard and the hardening of the shell has progressed more than half way to the base of the nut. Even at the base the shell is quite firm but still easy to cut with a knife..."

## MUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Brownstain, a non-parasitic disorder of filberts resulting in an abortion of the embryo, is prevalent this year in certain filbert orchards in the Willamette valley," he reports August 17th. "In one Brixnut orchard which was visited on the tour it is estimated that 10 percent of the nuts are affected with this disorder....Filbert harvest will soon be at hand. A few nuts are already dropping. The harvest season is almost two weeks earlier than normal."

"Studies on the possible cause of a dying of walnut trees in a grafted orchard near Newberg, Oreg. were carried on during the week ending August 10th. One of the dying trees was found infected just below the crown with Armillaria mellea. Another was found infected with an unidentified wood rotting fungus. In all other cases examined, however, the cause of the dying was obscure, there being no evidence of a parasitic microorganism associated with the trouble. As a further check upon the nature of the disorder in question, platings were made from specimens collected from the crown of the dying trees but thus far no parasitic organism has been isolated. A study of the soil profile from a 5-foot trench made in the soil in this orchard revealed the fact that adverse conditions for growth prevailed from the fourth foot downward. The subsoil was found to be a tight sandstone which is largely impervious to water. Comparatively few roots were present in the excavated area below the third foot level. It is tentatively concluded from studies made to date that adverse soil conditions are primarily responsible for the trouble, although certain organisms may possibly be concerned secondarily in the decline of the orchard in question."

He had written August 3d: "Results of tests carried on in the Newberg, Oreg. area further indicate that copper oxalate when used at a sufficiently strong concentration is practically as effective as bordeaux mixture for the control of walnut blight. Thus, in tests carried on in an orchard near Sherwood, Oreg. copper oxalate 3-100 plus rosin emulsion sticker, 1 pint to 100, reduced the incidence of blight infection on the nuts from 50.6 percent to 3 percent, while the same number of applications of bordeaux mixture 4-1-100 plus mineral oil, 1 pint to 100, reduced the incidence of infection to 1.1 percent."

"Results of field studies on the effect of fertilizers on the incidence of walnut blight were taken.... In an orchard near Salem, Oreg. little if any effect on the incidence of blight occurred from the use of a complete fertilizer combined with certain minor elements including zinc, copper, boron and manganese. It is planned to continue these experiments over a period of several years, as the effects may be cumulative and take several years to manifest themselves..."

## DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"Grape Yields.--Grape harvesting has been in progress in the vinifera-rootstock blocks for several weeks," he writes August 24th. "Lower yields were recorded for four of the five varieties now completely harvested. The Castiza (Red Malaga) however gave an average production this year of 13 tons per acre compared to 10 tons per acre during 1939. The picking of the various varieties has been 10 days to 2 weeks earlier than last year. This earliness can be directly correlated to a summation of temperature between blossoming and ripening. During 1939 the day-degrees F. over 50°F. reached 3,008 on August 28th, while this year 2,946 was reached on August 18th. Three years' records at Fresno indicate that it takes about 3,000 day-degrees F. over 50°F. to bring the Sultanina from blossoming to a ripeness of 18 to 19 percent sugar. Varietal requirements in respect to heat units is indicated by the maturity of Magouti Rouge in approximately 1200 day-degrees F. over 50°F., while the Chanez requires about 4,000 similar day-degrees.

"Grape propagation.--Records have been taken of the results of various types and methods of budding grapes. Both 'T' and Chip budding have been practiced in nursery rows and under field conditions. To ascertain the extreme limits of budding under field conditions, vines have been budded every 15 days over a year period. Records have also been taken on the time of cutting off the stock above the bud and its effect on the subsequent bud growth. Scion bud sticks were kept satisfactorily wrapped in moist moss and oiled paper in an ordinary electric refrigerator for a four months period in connection with the budding operations.

"Temperature records.--Our hottest day of the season so far occurred on August 11th, when 111°F. was recorded on our thermograph, shade temperature. August 5-11 was also our hottest week, the mean temperature 85.98°F. The range of temperature during the week was from 64° to 111°F. Temperatures since January 1st have been consistently above normal with the exception of July which was only .9 below the normal average. There has been an accumulation of practically 3 degrees per day above the normal average since January 1st. This has been reflected in earlier maturity of grapes as indicated above."

He had written August 10th: "Grape seedlings, fruiting for the first time this season, have been checked over for the purpose of noting the early ripening types. Some interesting seedlings fruited this season, combining color, size, and muscat flavor. The muscat flavor occurs mainly in seedling that have the Muscat Hamburg as one of the parent varieties. The flavor transmitted by the Muscat Hamburg is more pronounced than that of Muscat of Alexandria. Seedling selections are being made for a planting to determine their production and possible commercial merit."

## DECIDUOUS FRUIT INVESTIGATIONS

R. E. Wilcox, Pemberton, N. J.

"The blueberry harvest continued to the middle of the period, and there would have been a shipment of considerable size on the 26th if rains had not interfered with picking the fruit," he reports for the August 16-31 period. "Rainy weather has been almost continuous since that time and there will probably be no further shipment of blueberries after this date. Total figures for the harvest are not yet available, but they will exceed those of any previous year.

"Cranberry growers feel that the recent rains will increase the size of the fruit on many bogs. A large crop is not anticipated, however. The official forecast for the New Jersey crop is 100,000 barrels, but as usual many growers feel that this estimate is somewhat high.

"Some growers are having difficulty in securing labor for the cranberry harvest. A drastic child-labor law which will become effective September 1st will prevent most of the Philadelphia families, which have been coming to New Jersey for many years for the cranberry harvest, from leaving the city after the opening of schools.

"Since the picking and scooping of cranberries requires some skill and experience to avoid serious injury to the vines, ordinary migrant labor, such as southern negroes, who work in the New Jersey potato fields, cannot be employed profitably on the bogs. The situation is further aggravated by a recent contract for the erection of more than 800 buildings at Fort Dix, which I am informed will give employment to about 5,000 workmen at prices ranging from \$2.00 per hour for carpenters down to 80 cents per hour for unskilled laborers.

"One large cranberry grower has about 150 acres of young bogs just coming into bearing. These cannot be harvested with the New Jersey scoop without inflicting heavy damage on the vines. This grower would have started the harvest of his early varieties on August 26th if the weather had permitted, but the entire week has been wet and rainy so that he has not yet started picking. He is now considering a trial of 'snap-scoops' as sometimes used in Massachusetts. The problem here in New Jersey is not so much the rate of pay for labor during harvest as it is the preservation of productivity of bogs unsuited to scooping.

"The almost continuous rains during the past week interfered seriously with our cleaning up of weeds in the hybrid seedlings."



## DECIDUOUS FRUIT INVESTIGATIONS

Leslie Pierce, Vincennes, Ind.

"Although a further supply of moisture is much needed, the general condition of the apple crop is greatly improved," he reports August 27th. "Up to this time the extreme heat that prevailed the last week in July and the first 18 days in August has not resulted in a heavy drop of fruit. If favorable weather conditions continue, it is very likely that we will not have to begin the harvest of Grimes Golden and Delicious apples before September 15th.

"In the past 10 days I have examined practically all of the plantings of young peach trees in Knox County, and one orchard in Sullivan County. The trees in these plantings ranged from two to seven years old. The most noticeable thing in connection with this survey was the small amount of bacterial spot showing on the foliage. I am wondering if the destruction of practically all of the Hale trees by the freeze in January, 1936, has anything to do with the absence of severe bacterial spot infection. So far this season I have not found a single active B. pruni canker."

H. F. Bergman, East Wareham, Mass.

"I wrote early in August that cranberry vines planted this year on a bog that had been flooded with salt water during the hurricane of September 21, 1938, were dying from salt left in the soil at that time. Since then I have analyzed some soil samples and vines from this bog. Soil samples contained from 0.2 to 0.4 percent of salt (sodium chloride) on the basis of the water content of the soil samples. The soil samples were taken early Monday forenoon and the bog had been flooded late Saturday afternoon and the water let off early Sunday morning. As this greatly increased the water content of the soil the percentage of salt was lower than it would have been if the bog had not been flooded.

"Even under these circumstances the amount of salt present was higher than would have been expected so long a time after the flooding with salt water. Old stems with leaves showing salt injury but not dead contained 2.5 percent salt. These stems were rooted cuttings planted this year. Dead and dried new shoots that had been subjected to leaching by rain and by flooding contained only 0.4 to 0.5 percent salt; dead, dry new shoots little or not at all leached, contained as much as 5.0 percent salt; while new shoots that were still alive but wilted and dying contained 9.0 to 10 percent salt. A weed (Erechtites hieracifolia) growing in the area where cranberry vines were dead or dying and which showed no evidence of injury contained 6.9 percent of salt. (All percentages on the basis of dry weight). Another bog near here also flooded with salt water during the hurricane was not replanted until this year. The cuttings are making apparently normal growth with only a very occasional plant showing evidence of salt injury."

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Of the approximately 600 seedlings in the 1938 test block, 500 were removed. Seventy seedlings were retained for further testing, and the remaining 30 failed to fruit this year and so were given a year's grace before judgment is passed. The percentage of seedlings saved is smaller this year than in a corresponding block last year, but that is attributable to a higher proportion of white-fleshed seedlings, which were more severely rogued."

## CHEYENNE HORTICULTURAL FIELD STATION

Dr. A. C. Hildreth made a trip to New Mexico early in August to collect native fruits and to confer with various State research men.

The vegetable garden is being harvested, a quantity of endive, cabbage, kohlrabi, beets, squash, onions, Swiss chard, peppers, and string beans having been turned over to the CCC camp.

Dr. Powers' crew finished the pollinating work on cucurbits early in August and the men are back on the usual working basis after a rather strenuous period of 4 a.m. reporting in order to push the work through effectively.

Fruit is now demanding attention since as it begins to ripen the station has a real problem in fighting off the magpies and jack rabbits that insist upon harvesting it! Fortunately, Dr. Hildreth was able to enlist the aid of an expert in this field, as Walter Roney of the Business Office at Beltsville happened along at the psychological moment. He visited Cheyenne on his vacation, renewing acquaintance with the men at the station, where he worked for some ten years. He and Mr. Kelso made a fishing trip to the Encampment and Platte Rivers-- "but you should have seen the one that got away!"

Mr. Krofcheck has been inspecting farm windbreak plantings in South Dakota and Nebraska, and conferring with various cooperators in those States. He also took advantage of the opportunity to make a collection of tree seeds for experimental use.

Dr. Benedict and Mr. J. R. Swallen of the Division of Plant Exploration and Introduction, Bureau of Plant Industry, visited the station the first of August. They were collecting herbarium specimens and seeds of native forage plants in the Cheyenne territory. Dr. Harter and Dr. Zaunmeyer of our Division also paid the station a short visit.

## POTATO DISEASES

The annual loss from potato diseases has been estimated at 45 million dollars. Thus the breeding of resistant varieties of good quality will result in immense savings to growers. Aside from savings in the cost of spraying and other disease-control measures, the control of diseases is basic to the efficient production of this highly important food crop.

Under the title "Scientists test potatoes for hidden virus diseases," the Press Service on September 8th gave to the newspaper an excellent discussion of a phase of our work in this field. "Because it is really the result of two diseases making a joint attack and is not a single simple disease," it says with reference to the dreaded mild mosaic disease of potatoes," it calls for particularly painstaking precautions by the scientists who are working to control the disease by breeding immune varieties.

"The condition recognized as mild mosaic results from the joint action of what the scientists identify as Virus X and Virus A. Neither of these viruses working alone causes serious symptoms or cuts production materially, but acting together they may reduce the yield by from 15 to 25 percent. Virus X is ordinarily transmitted in the tubers used for planting stock. Virus A is carried from plant to plant by aphids. Several of the most important potato varieties--including Green Mountain, Triumph, and Rural New Yorker--harbor Virus X, but mature good crops if they can be protected from aphids carrying Virus A. However, if the aphids bring the virus the crop suffers from what is known as mild mosaic. Testing for the viruses is complicated... The State and Federal scientists who are cooperating in the potato breeding program find that some of their breeding stock is completely immune to Virus X, some to Virus A. But when they crossbreed they cannot be sure by merely inspecting a plant that it is doubly immune.

"Katahdin, a new potato developed in the breeding work of the Department, never suffers from mild mosaic in the field because it has some quality that prevents infection by aphids. But it may--or may not--contract Virus X in the field, and the scientists have learned how to infect it with Virus A by grafting it with an infected plant. If the Katahdin then shows typical mild mosaic, they know it is harboring Virus X. The same method is used in testing new hybrids. Another method of identifying Virus X is to inject potato plant juice into Jimson weed or redpepper plant which react if there is Virus X in the potato.

"What the breeders seek is the full double immunity that will eliminate mild mosaic. They now have seedlings of this type. In the field it might take years for an otherwise promising seedling to reveal its lack of full immunity from both viruses. These special techniques for testing enable breeders to discard imperfectly resistant strains on which they might otherwise waste time and effort that can be better used in breeding table quality into fully immune hybrids."

### THE NEW SECRETARY OF AGRICULTURE

President Roosevelt administered the oath of Secretary of Agriculture to Claude R. Wickard at the White House September 5, 1940. Paul H. Appleby was sworn in as Undersecretary, and Mr. Wickard announced the appointment of two new assistants to the Secretary--Carl Hamilton of Iowa and Herbert Parisius of Wisconsin.

### LIGHT (?) ON TUNG OIL PRODUCTION!

"I am passing on a little incident that happened a few days ago which very clearly indicates the knowledge that some people have of the production of tung oil," writes Dr. H. L. Crane. "We have thought this might be appropriate for the News Letter.

"A group of visitors passing through the new greenhouses came to the building in which we have our nutritional experiments set up. In this greenhouse we are trying to determine the mineral nutritional requirements of tung trees. The leader of this group of visitors inquired as to the kind of trees there were growing. He was told that they were tung trees. As the visitors were leaving, one of the ladies noticed the drainage tubes from the cultural crocks and asked another lady in the group what these were for. The reply was: 'That is where they drain off the tung oil.'

"You can see by this that we have already made material progress in our research work on tung! This item was not included in our annual report of progress since the report was submitted prior to this occasion. If it is not too late, it probably would be well to report this as the most outstanding accomplishment during the past year!"

### METHOD OF GLAZING GREENHOUSES

Speaking of greenhouses, the Florists' Review tells of a new glazing method. "It is in the form of a softgum mounted on tape made of lead foil, said to hold glass and to protect the sash bars permanently.

"An engineering company discovered the method of making a gum-like substance that would stay soft and pliable for years.... It is used in refrigerators and for cooling rooms in the packing houses... For glazing, the lead tape on which the gum putty is mounted covers the sash bars and protects them from the sun and weather. It covers the glazing points so that they will not come loose. The paint on the sash bars is shielded completely against the weather, and the sheet of lead does not need to be painted." (Florists' Review, June 20, 1940.)

## ADMINISTRATIVE NOTES

Records for Safe driving "Several reports have been received showing that drivers of Government vehicles have operated them without accident for various lengths of time, some for more than 100,000 miles," says a memorandum of July 25th from the Office of Personnel. "It has been customary in the past in some Bureaus for the Chief to issue a letter of commendation or a certificate of merit and in some exceptional cases the Secretary has written the Chief of Bureau commending the organization and individuals on such records.

"In the development of any safety program it is just as necessary to recognize the good work done by individuals and groups as it is to point out the mistakes of others. It has therefore been decided to institute a Departmental procedure in recognizing the holders of exceptional driver's records; but first we would like to learn just how many Bureau employees have achieved outstanding records. If each Bureau and Office will forward to the Office of Personnel lists of employees who have records of 50,000 and 100,000 miles of driving a government vehicle without figuring in an accident of any kind, proper recognition will be awarded. Recognition of a good record by the Secretary should not supplant Bureau actions, but should emphasize and confirm them."

It will be appreciated if station superintendents and others concerned will send to Mr. Gould the names and records of employees who have driven Government cars 50,000 and 100,000 miles without figuring in an accident of any kind. We shall be glad to submit such records to the Secretary for recognition. A statement fully outlining the character of the work involved should be sent along with the driving record.

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Espionage, Sabatoge. The President has requested all law enforcement officers of the United States to turn over to the nearest representative of the Federal Bureau of Investigations any information obtained by them relating to espionage, counter-espionage, sabotage, subversive activities, and violations of the neutrality laws. At the same time the employee will report his action to the head of his office or division. In no event however, should the investigations be made by Department employees themselves.

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Franked Mail The report on the weight and count of mail sent out under frank for the quarter ending September 30, 1940, must be in the Office of the Chief of Bureau not later than October 10, 1940. Please mail your report to the Business Office as promptly as possible at the end of September so that there may be no delay in getting out the consolidated report of the Division.

Vol. 12 No. 18

September 16, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y   N E W S   L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and no are not necessarily the official and final word on the subjects.

Vol. XII

U. S. Horticultural Station, Beltsville, Md.

No. 19

October 1, 1940

"New-models

Small fruits."

Farmer Knott's wife cooked two chickens the day the two ministers came to dinner, but Knott consoled himself with the thought that the family would be able to make another

meal from what remained after the dinner. But when the gentlemen of the cloth had finished there were no remains. After dinner, while the well fed visitors were strolling around the farm with their disgruntled host, a rooster began to crow loudly. "Pretty proud of himself, isn't he?" remarked one of the parsons. "Humph!" grouched the farmer, "No wonder-- with two of his sons in the ministry!"

It occurs to us that Dr. Geo. M. Darrow and his associates must be feeling pretty proud of themselves, too, what with several of their small fruit creations receiving prominent mention in the Country Gentleman for October, 1940. In his discussion of "New-Model Small Fruits," J. Sidney Cates is especially enthusiastic over the new Massey strawberry. This strawberry is the result of a cross made by Dr. Darrow at Glenn Dale in 1933. It is a high-quality strawberry for home-use or commercial purposes, adapted to the Southeast--vigorous and highly resistant to leaf and other diseases. The fruit is of eye-arresting beauty, size and quality, with a skin tough enough to permit long distance marketing. Mr. Cates is impressed, too, with the promise of the Sunrise, Starbright and Goldstar strawberries, new creations resulting from Dr. Darrow's willingness to "Let George Do It," for the crosses were made by George F. Waldo.

Other small fruit creations that attracted Mr. Cates' attention including the Potomac raspberry--when he obtained a full quart box from a first picking at Beltsville, with at least four quarts remaining on the same bush!--and the Glendale gooseberry, a variety selected from seedlings left by the late Dr. Van Fleet. Five gallons of berries were picked from a single 7-year-old Glendale gooseberry plant!

## DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The apple market has suffered from a lack of demand for fruit and some growers are beginning to put fruit in cold storage," he writes from the Fayetteville laboratory on September 14th.

"The fact that the cotton crop is late and picking has only just started appears to be one of the factors in the problem for the dealers report that there is no demand for fruit in the cotton section at the present time. The cotton sections in the southern part of the State normally take a considerable portion of the Jonathan crop. As soon as cotton picking gets under way and money is realized the demand for apples will increase. Previous to this slump in the market, which began to develop after the Labor Day holiday, good quality Jonathan apples were selling for \$1.00 a bushel in the Springdale area.

"One grower in the Springdale area reported using a naphthalene acetic acid pre-harvest spray on a block of 50 Ada Red trees. The spray was applied approximately one week before picking. On the day the spray was applied, five bushels of apples were collected as 'drops' from under the trees. The same quantity was collected the next day, but two days after the spray was applied there were only 2-1/2 bushels of drops under the trees, and practically none on the following days. The same spray was applied to several old Jonathan trees and the serious dropping of the fruit was stopped immediately. The grower reported some slight trouble in polishing the fruit sprayed with this pre-harvest hormone spray.

"Several commercial substitutes for bordeaux mixture were used in the Welch vineyard at Tontitown this season. These substitutes contained 34 percent metallic copper and were used at the rate of 2 pounds to 50 gallons. The black rot fungus was controlled by these preparations, but they delayed the ripening of the fruit and one preparation, produced a marked dwarfing of the leaves. The addition of 4 pounds of zinc sulphate to 4-4-50 bordeaux gave very satisfactory results. The leaves were larger and darker green and the manager reported a heavier tonnage of grapes from this plot. However, this may have been due to slightly better soil conditions and further tests are necessary to confirm these results."

He reports that a vast high pressure area swept down the Mississippi Valley during the week ending September 14th and unusually low temperatures were recorded for this time of the year. However, as the disturbance moved eastward the temperatures began to rise and the week ended with normal September weather prevailing.



## DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"The Delicious harvest is over the peak at this date," he writes September 16th. "One week of high temperatures retarded color development in many locations, particularly on the regular Delicious. Weather conditions have changed during the last few days, however, and possibly the color will be better from now on. The naphthalene acetic acid sprays have helped the Delicious deal in practically all cases where it was used. One exception occurred where the grower had a tendency toward being a little Scotch with his gallonage per tree. We have had several opportunities of checking on the effectiveness of these hormone sprays and in every case the drop was considerably less in the sprayed trees. I anticipate a heavy demand for this material another year here in this district.

"Cork spot in Anjou pears has been very serious this season, perhaps the most serious of any past year. We do not of course know the reason for this but it is rather interesting to find that the mean temperatures for this summer have been higher than they have been for several years. Also there has been considerably more air movement this summer, thereby increasing the evaporating power of the air above recent years. Whether or not this has any bearing on the incidence of cork spot we are unable to determine at this time. However, it fits in with our findings of four years ago where cork was usually found on trees with injured root systems where apparently the roots were unable to furnish sufficient moisture during the period of high transpiration."

Elmer Snyder, Fresno, Calif.

"Grape Seedlings: The fruit of many grape seedlings has been sampled and descriptive notes recorded during the past several weeks," he reports September 14th. "Promising seedlings were selected for further trials. Poorer seedlings were eliminated. Seedlings in the doubtful class will be continued another year. A number of additional seedless seedlings were obtained this season. Interesting fruit was obtained from seedlings representing crosses of the largest white, red, and black fruited vinifera varieties now in our varietal collection. The muscat flavor was quite pronounced in a number of seedlings having the Muscat Hamburg as one parent."

## OFFICE HOURS

The summer hour schedule will terminate September 30 for Department employees in Washington and Arlington Farm. With the matter left to the vote of the employees, and the large majority favoring the present schedule, employees at Beltsville will continue to work from 8:30 a.m. to 4:00 p.m. from Monday to Friday; and from 8:30 a.m. to 12:30 p.m. Saturday until further notice. Arlington Farm will operate from 9:00 a.m. to 4:30 p.m.

## DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"Anjou harvest started in full swing August 31st," he reports. "The crop was heavy but quite a severe drop occurred as a result of heavy winds. Certain orchards showed severe frost injured pears, and blackend was quite severe in some orchards again this year.

"I am sorry to report that the orchard treated with boron showed as much blackend this year as during the year of treatment. Pinkend of Bartlett pears was severe in at least one orchard. Mr. Childs has a new aphid that may be causing some of this trouble. Isolations made from the very base of the calyx, where the old stamen structure merges with the stone cell ring, have yielded a good percentage of Alternaria and Stemphyllium cultures..."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on September 15th he reports that the best control of leaf spot and mildew on blueberries has been obtained on those plants receiving the pre-harvest and post-harvest sprays and a spray thirty days later.

"Fairly good control was obtained on those receiving the pre-harvest and post-harvest sprays. Leaf spot is bad on the plots receiving only the pre-harvest spray. There is considerable mildew showing up on the check row. This mildew is mostly on the under side and causes a distinctive spotting. I have not observed any perithecia.

"On September 12th the Annual Field Day and Picnic as held here at the station. It is estimated that about five thousand persons attended. We did not have field trips to the experimental plots, but all the plots were labeled. Considerable interest was shown in an exhibit of small fruit diseases that Mr. Dearing asked me to prepare."

## CANNING FLORIDA CITRUS FRUITS

From Lakeland, Fla., September 6th, the Associated Press reported that more than 13,000,000 field boxes of grapefruit and oranges, almost a third of the 1939-40 Florida crop, went into cans, according to the Florida Citrus Commission.

Only 10,421,000 field boxes were used by the canners during the previous season.

## DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

"Cranberry picking did not get fully under way until Thursday of this week," he writes from the Cranberry Disease Field Laboratory on September 16th. "Growers were ready to begin Monday, but light intermittent showers that continued up to Wednesday night prevented any picking. Wednesday night there was a heavy rain that continued during most of the night. Thursday was clear and warm with a moderate breeze so that by noon the bogs had dried sufficiently to permit picking to begin. Berries in general are running small but are mostly well colored.

"The keeping quality of cranberries appears now to be the best in the last eight or nine years. Berries from the bog of Early Black at Assonet, which ordinarily have 15 to 25 percent of rotten berries at the time of picking, had less than 1 percent of rot this year. This is due to the fact that the season has been unusually cool and no rain of consequence fell during July or August."

He had written September 7th: "A few cranberry growers began picking early varieties this week. At present it is mostly hand picking on new bogs or in vines that can not be scooped without considerable damage to the vines. A little scooping is being done, however. Most of the growers are waiting until next week to allow the berries to increase in size and to become better colored."

R. B. Wilcox, Pemberton, N. J.

Writing from the Cranberry and Blueberry Disease Laboratory on September 15th he reports: "Most growers are now picking their Early Black cranberries, and the fruit is well colored. There has been considerable difficulty in securing labor for hand picking, and the harvest will probably be slower than usual. However, available labor should be able to harvest the small New Jersey crop within a reasonable time.

"The fruit of the hybrid seedlings at Whitesbog is coloring rapidly and a few varieties are ready to pick. We were fortunately able to secure a gang of laborers to remove all grass and weeds from around the seedlings planted this year. I could not use this type of labor for tucking in the runners, however, and have spent considerable time getting this job under way. Most of these young plants have made a very vigorous growth, some individuals having produced more than 30 feet of runners during the last three months. An indication of what may be looked for from these plants next year was given by the behavior of one seedling planted in the spring of 1939. To satisfy our curiosity we measured this seedling a week ago and found that it had made 155 feet of runner growth this season. It is to be hoped that the new seedlings will not all follow this example!"

## SPRAY RESIDUE ON APPLES AND PEARS FOR EXPORT

Under the above title, the news letter of the Department's Agricultural Marketing Service for September 6, says:

"Regulation 7 of S. R. A. 143, revised, provides that "No certificate shall be issued under this act and these regulations except upon a showing satisfactory to the Chief of the Bureau of Agricultural Economics that the apples and/or pears comply with the tolerances for arsenical and lead spray residues established by the Department of Agriculture."

(Since July 1, 1939, of course, S. R. A. 143, revised has been administered by the Agricultural Marketing Service of the United States Department of Agriculture.) The news letter item continues:

"It will be the policy of the Inspection Service in the future to pass without question as to residue any lot of apples which State authorities have permitted to be shipped in interstate commerce unless it is known that Federal authorities have taken samples in order to determine whether such a lot complies with the recently established tolerance of 0.025 grain per pound for arsenic and 0.05 grain of lead.

"The exception to this general policy will be when unanalyzed fruit shows readily visible residue in which case the applicant will be advised that analysis will be necessary before an Export Form Certificate can be issued. Samples for analysis should be taken by the inspector in the same way as in the past. If the analysis shows the fruit to be within the recently established tolerances the usual Export Form Certificate will be issued. If it should show residues in excess of these tolerances no certificate is to be issued and the facts relating to the case, including the results of the analysis, should be forwarded to the Washington office."

## MANUSCRIPTS BEING REVIEWED BY SPECIALISTS

"At a meeting in my office early in July," says B. P. I. Memo. 1134, dated September 10, and signed by Dr. Auchter, "representatives of several divisions discussed ways and means of speeding up publication of manuscripts. One point which met with general agreement was that when manuscripts are referred to specialists for comment it should be understood that the manuscript must be returned within two weeks. If the specialist is away on an extended field trip, or for any good reason is unable to review the paper within the specified time, his office should be instructed to return it immediately.

"I know there are many other causes for delay, and we shall have to tackle them one by one. I hope that every division head will see to it personally that this suggestion is carried out."

## NUT INVESTIGATIONS

John H. Painter, Cairo, Ga. (Tung investigations)

"Because of the great difference existing in the percent of germination between our nursery at Lloyd and the two nurseries at Bogalusa, we made a recount on the germination percentage, only to discover that an additional one hundred days has failed to materially increase our germination," he writes from the U. S. Field Laboratory for Tung Investigations, on August 31st. "The average percent germinated is 53-1/2 percent against 73 percent last year and somewhat over 70 percent this year in the Bogalusa nursery.

"We want to point out, at this time, that we planted this nursery in the same location that last year's nursery occupied. This was done, in spite of advice given by two growers, who insist they have never been able to obtain a satisfactory nursery, using the same location two years running. We felt, at this station, that the reason was principally exhaustion of nutrition in the soil and since we knew that was not the case in this nursery, we disregarded the advice. The two nurseries at Bogalusa, which are composed of the same seed sources, were planted on new ground and though we cannot account for it, the evidence in favor of changing the site of the nursery from year to year seems hard to refute....

"An examination of the trees that had been mulched with sawdust reveals the fact that the roots have come up and are rapidly spreading throughout the sawdust mulch. We feel that this must also mean increased growth in the roots beneath the soil as well, though we have not dug up any trees, as yet, for examination. The pine straw and the tung hulls and the hay mulch have not, as yet, caused the roots to rise as rapidly as the sawdust, though there is some indication that in time the roots will come up under all mulches."

Dr. Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"In the soils laboratory quick tests for potash and phosphate were run on 54 soil samples collected about five weeks after fertilization from the fertilizer placement plots on Red Bay sandy loam soil at the Cairo station," he reports September 14th. "Both the  $K_2O$  and  $P_2O_5$  contents of the soils were about the same as before fertilization except where the samples were taken through the band or close to the hole where the concentrated application of fertilizer was located. In these instances the tests for both  $K_2O$  and  $P_2O_5$  were very high, as is to be expected. However, 6 inches or more away from the concentrated fertilizer no significant increase in amounts of  $P_2O_5$  and  $K_2O$  over the unfertilized soil was noted, indicating little or no movement of these elements in this soil after five weeks."

George M. Bahrt, Fairhope, Ala. (Tung investigations)

"This week found the experiments really under way," he writes September 7th from the U. S. Field Station for Tung Investigations. "In the La Fortune orchard near Lucedale, Miss., 576 trees were staked and tagged according to the treatment they will receive. The tags were of metal and were put on the trees with loose wire loops. The loops were used instead of pounding nails into the trees, so that there could be no question later when it might be said that the results obtained were partly due to the material in the nails. This seems ridiculous but from past experience (in Florida) with less common elements such insignificant things have resulted in criticism."

Clifton W. Van Horn

"Some budding is still going on by the growers," he writes September 14th. "Considerable budwood from the Humble trees has been taken during the past two weeks by local growers who are top working Burkett trees. Some Mahan buds are also being used."

"Harvest Samples have been started on six varieties now. They are being treated with ethylene to remove shucks. Observations and notes were taken regarding shuck loosening and opening. Such observations will be taken at frequent intervals from now until after harvest time."

C. L. Smith, Brownwood, Texas.

"The earlier pecan varieties in the station orchard are just beginning to fill," he writes September 6th from the U. S. Pecan Field Station. "There are one or two extra early varieties in the State that are already ripe. The crop this year will probably be above previous estimates as the nut case-bearer damage was less than anticipated and the freeze damage also was less than predicted in some areas."

## CONTRIBUTIONS OR PRESENTS TO SUPERIOR OFFICERS

A letter from the Director of Personnel points out that Department Regulation 1543 prohibits contributions or presents to official superiors. It provides that no officer, clerk, or employee in the United States Government employ shall at any time solicit contributions from other officers, clerks, or employees for a gift or present to those in superior official position. "A few instances of violation of this provision have recently been reported to this office," he writes. "It seems probable that many employees are not fully aware of the wide scope of this prohibition and the severe and mandatory penalty provided for its violation." The Regulation states definitely: "Every person who violates this section shall be summarily discharged from the Government employ."

## PLEASANTLY INCOMPREHENSIBLE

At a meeting of the British Association a physicist is said to have explained that the idea of relativity is popular because to most people it is "pleasantly incomprehensible." Apropos our own effort to escape pleasant or unpleasant incomprehensibility is our publications, Mr. H. R. Fulton calls attention to an early campaign in this direction. "A History of the Royal Society," published in 1667, says that the Society has "eracted from all members a close, naked, natural way of speaking; positive expressions; clear senses; a native easiness; bringing all things as near the Mathematical plainness as they can; and preferring the language of Artisans, Countrymen, and Merchants before that of Wits and Scholars."

It may be, of course, that the reason some writers indulge so freely in technical language is to be found in a discussion overheard between two colored boys. One of them was criticizing an absent associate for his use of big words, insisting that he was "putting on airs." "He ain't puttin' on airs," declared the second boy, positively. "I don' figger it dat way a-tall. De reason Mose uses all dem big words is becaus' he's afraid if folks ever find out what he's talkin' about, dey'll know he don't know what he's talkin' about."

Not that the use of scientific terminology isn't desirable or even necessary at time! That it may serve a practical purpose is well illustrated by the experience of a certain nut grower who was losing his filbert crop to trespassers. He posted the following notice at conspicuous places among his nut trees:

TRESPASSERS BEWARE! All persons entering this wood do so at their own risk, for although common snakes are not often found, the common Corylus avellana abounds everywhere about here, and never gives warning of its presence!

The trees, we are told, remained unmolested from then on, and the grower was able to harvest the first full crop in his experience.

In connection with botanical terminology, Dr. J. S. Caldwell insists that we could make an important contribution to a field of botany comparatively little studied if we would analyze reports and classify terms describing growth activities. A plant, for example, may be reported as growing furiously. How about others? Offhand it might be supposed that the trumpet vine grows vociferously rather than furiously; the poison ivy malignantly; the crab grass obstreperously. A plant may burst into leaf, a very common way employed in getting there, but Dr. Caldwell wants some notice taken of those that ooze or slide imperceptibly into leaf, Amoeba-like; those that turn around and back in; or those that employ any other distinctly different methods of becoming embowered in foliage.

## ADMINISTRATIVE NOTES

Taxicab Fares A recent memorandum from the Business Office concerning taxicab fares, while issued primarily for employees residing in Washington, D. C. and nearby points, will also be of interest to workers who may be visiting Washington or Beltsville from time to time. It says:

"The following memorandum was recently received from our Bureau Office of Accounts in regard to taxi fares in the District of Columbia: 'In a recent settlement of a reimbursement voucher the General Accounting Office limited charge for taxi fare from the Union Station, Washington, D. C., to residence in a suburb, to \$.80, the maximum taxi rate for the District of Columbia. The traveler's official headquarters is Washington, D. C., and the excess taxi fare was suspended with the comment: "When an employee elects to reside at a place beyond the metropolitan area of his official station and to which taxicab rates within the boundaries of the official station are not applicable, the Government is not liable for the excess cost of transportation incident to such election." Since the above appears to be a future settled policy of the General Accounting Office, it will be necessary to suspend any excess charges for taxi or other fares from suburbs where the official headquarters is shown to be Washington, D. C.'"

This ruling has been discussed with the Bureau Office of Accounts in its relation to employees headquartered at Beltsville, Md. The understanding at present is that employees living in the vicinity of Beltsville may be reimbursed for transportation charges from their homes to Union Station when it is necessary for them to take a train at that point. Employees who have their residences in other sections, such as Takoma Park, Chevy Chase, Arlington, etc. will be reimbursed for transportation from residence to Union Station not to exceed \$.80 when a taxi is used.

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Christmas Mails It is probably not too early to caution you regarding the Post Office's desire to withhold from the mails bulk mailings in so far as this may be practicable during the Christmas holiday season--from December 10 to 26. Bulk mailings of pamphlets, printed matter of other kinds, supplies, etc. not only seriously interfere with the expeditious handling of the holiday mails but on account of their bulk and weight may cause damage to Christmas parcels.

So make a note now to order supplies sufficiently early to effect delivery before December 10!



## NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The filbert harvest is now on in practically all parts of the Willamette valley," he writes from the U. S. Fruit Disease Field Laboratory on September 14th. "The crop appears to be slightly larger than last year. The financial returns from the filbert crop will be greater in most cases than last year as buyers are paying from one to two cents per pound more than a year ago."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

N. H. Loomis (Small fruit investigations).

"During the week ending August 24th Champanel grapes from small observational plots were harvested," he reports. "Spur pruning increased the yield more than 100 percent over vines pruned to canes. This occurred the first year that spur pruning was practiced and before the spurs along the arms were well developed. The yields previously have been low for a variety of such vigor."

## ADMINISTRATIVE NOTES

Gasoline In connection with the nation-wide Procurement Division contracts for service station deliveries of gasoline, oil, etc., our Business Office is in receipt of a letter from the Baltimore office of the Standard Oil Company of New Jersey stating that in some instances Government employees using their credit cards have issued tax exemption certificates, Form 1094, to the service station attendant at the time purchase was made. The Company asks that this practice be discontinued. Tax exemption certificates should be issued only upon receipt of the Company's bill for the total purchases made during the month. The certificate should be made out to "Dealers of Standard Oil Company of New Jersey." This particular statement applies also to Standard Oil Company of Louisiana, Standard Oil Company of Pennsylvania, and Colonial Beacon Oil Company. The words "Dealers of" may be omitted from the tax-exemption forms issued to all other Standard Oil Companies, the Texas Company, Phillips Petroleum Company, E. D. Priddy and Sons, Shell Oil Company, and Signal Oil Company.

The accompanying 1034 voucher should show the particular contract number, the number of the credit card on which the purchases were made, the United States Department of Agriculture license number of the automobile or truck serviced, and the numbers of the tax exemption certificates issued, for both State and Federal tax. Also be sure to attach the individual sales slips when sending in the Company's certified bill.

Vol. 12 No. 19

October 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Vol. XII

U. S. Horticultural Station, Beltsville, Md. No. 20

October 15, 1940.

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\$3,000,000 Dividend! Many years ago Bishop William Crosswell Doane wrote a few lines concerning homeopathic remedies, and offered a suggestion regarding the preparation and use of one of them: "Stir the mixture well, lest it prove inferior. Then put half a drop into Lake Superior. Every other day take a drop in water. You'll be better soon--or at least you oughter."

I used to think his lines a bit exaggerated, but I may have been mistaken; he may have had in mind a hormone preparation! The dilution he suggests does not seem to be much out of the way if one may judge by the warning our specialists feel compelled to issue in connection with the hormone sprays used to prevent apple "drop." A spray containing but one-thousandth of one percent of the pure hormone--about a teaspoonful to 100 gallons of water!--is strong enough; and half that strength would be quite apt to prevent the dropping.

The chemicals used in these sprays are now being put out in a commercial form easy to use by the average apple grower, so that it begins to appear that the familiar complaint "If the apples could stay on the trees a few days longer color would improve--but we can't take a chance on losing half the crop by dropping," may be pushed into the discard.

The statement made by Secretary Wallace before the Senate Appropriations Committee February 26, 1940, that this discovery of a method to prevent the fall of apples before harvest might well save growers of this country \$2,000,000 annually within the next few years may be justified much sooner than he expected!

## APPLES--AND THEIR BYPRODUCTS

Apples are still the most important fruit crop in the United States. At times the annual value of the crop to growers has reached the amazing figures of 150 to 200 million dollars! Too, the apple is grown over a wide range of territory in this country, being commercially important in 40 or more States. From a dietary standpoint, of course, it is also in the top rank.

Then there is the matter of byproducts. This came up for discussion at lunchtime at Beltsville the other day when the conversation turned on a rumor that Dr. Lagassé has offered Dr. Magness an honorarium (in tung oil, extracted by the new tube method) to play with the Gainesville tung station married men's baseball team at the next annual picnic. Some one suggested that a part of Dr. Magness' success as a homerun hitter might be due to the bat he uses--turned out from the limb of an apple tree (for sentimental reasons), and plugged with lead (for practical purposes).

This naturally directed the talk toward the byproducts of the apple tree. Juice production is moving forward, of course, and just recently a report from Blacksburg, Va. tells us that a group of Rappahannock apple growers have begun manufacture at Sperryville of pasturized apple juice from low-grade fruit, and will develop sales at roadside stands on Skyline Drive and other northern Virginia highways.

An article in the United States Tobacco Journal for August 17, 1940, announced that some people in California are trying to figure out how 1,800,000 acres of California apple trees may help to furnish cigarette paper for the entire United States. Much of the cigarette paper now being used in the United States, the article says, has been coming from France, at a cost of about \$900.00 a ton. The California Waste Utilization Commission asserts that a better quality of paper can be manufactured for \$250.00 a ton from apple tree prunings that are usually thrown away.

For those apple lovers who shrink from the thought that their favorite tree might be aiding in the spread of the cigarette, there is a reverse to the shield--inside stuff. It concerns a discovery that may revive the famous old song: "There ain't Going to Be No Core!" From Portland, Oreg. on August 14, 1940, the Associated Press reported that Dr. Ira A. Manville of the University of Oregon Medical School had completed experiments in the nutritional research laboratory at the University that indicate that apple seeds are rich in a muscle-regulating substance, probably a vitamin. Eating ground apple seeds or drinking the oil pressed from them caused remarkable recoveries in animals near death from wasted muscles, Dr. Manville reported.

## EXPERIMENTAL CONTROL OF CROWN GALL IN THE PEACH NURSERY

E. A. Siegler and J. J. Bowman of our Beltsville staff have announced additions and confirmatory results in connection with the experimental control of crown gall in the peach nursery. Although crown gall has been of major seriousness on peach trees in many nurseries for fifty years or more, there has been no attempt to combat it, in the absence of a practical control measure. The experiments of Siegler and Bowman have dealt with (1) the effect of calomel dip on the pits and with (2) the effect in increasing the amount of crown gall when lime is applied to acid soils. The results of the second season's test on the use of a calomel dip on pits have now been obtained, confirming findings of the previous year, so that this control method can be recommended with a considerable degree of confidence. In the 9 calomel treated plots, 4 percent of the seedlings had crown gall; in the 9 non-treated plots 58 percent.

The control treatment consists in dipping for several seconds, the hard, uncracked pits in a thoroughly stirred water suspension of calomel at the rate of 4 ounces of calomel to 1 gallon of water. The treated pits should be allowed to become surface-dried before planting. The object is to have the pits thoroughly coated with the calomel. The calomel solution should be stirred as each batch of pits is dipped. In the experiments reported on, the pits were suspended in open-mesh cotton sacks, but undoubtedly better methods for treating large lots of seed will be devised. The question as to the number of times the dip can be used and the proper strength of the suspension will be largely a matter of judgment. If the pits are reasonably clean and the suspension remains reasonably white, the same dip can be used as long as it lasts.

As there is apparently no danger of reduction in stand as a result of the treatment, Siegler and Bowman are making an announcement of their results through a nursery trade journal with the suggestion that those nurserymen who encounter losses from crown gall treat about 10 bushels of pits this fall and plant these treated pits for comparison with non-treated pits. For this purpose 1 pound of calomel should suffice and the expense involved would be negligible. Such plantings, performed in various parts of the country, would serve as a test of the efficacy of the treatment.

In the third season's trials on the increase in the amount of crown gall when artificially infested acid soils are limed, the results, in harmony with those of the preceding tests, were as follows: 8 limed (pH 6.6 to 7.0) plots, 773 trees examined, 52 percent crown gall; 8 non-limed (pH 4.6 to 4.8) plots, 708 trees examined, 4 percent crown gall. It is evident that lime should not be applied in nurseries growing peach trees except under unusual conditions. It is probable that this precaution would be applicable to other stock in those nurseries where crown gall is a problem.

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Last Wednesday the Georgia pathologists met at the laboratory to begin a field tour of the pecan disease work," he writes from the U. S. Horticultural Field Laboratory on September 23d. "About 25 pathologists, entomologists, horticulturists and growers assembled and were first shown the phony disease work under way here, with apparently much interest on their part. I accompanied the tour through this section and saw some remarkable results of the effectiveness of the scab control sprays....."

"A tree of USV 8 in Mr. Baird's orchard which we had tented early in the season for breeding purposes was declared a typical phony by the inspector last month, and was removed. Since one scaffold limb which had not been covered by the tent was perfectly normal, and all new growth made on the affected part after the tent was removed in June was normal, the tree was not phony, but it shows how artificially produced phony symptoms will fool even an expert."

## PRODUCTS FROM CRANBERRY SKINS

The Scientific American for October, 1940, says that laboratory men have devised a method for using cranberry skins, discarded in the making of cranberry sauce, to derive ursolic acid. This hitherto rare emulsifying agent helps to make oil and water mix. From the same "waste" product, cranberry seed oil, a rich source of vitamin A, can be obtained. Plans are afoot for a \$50,000 pilot plant to pioneer the manufacture of the two new products.

-- Daily Digest

## PLENTY OF VITAMIN C IN STRAWBERRIES!

Ascorbic acid, otherwise known as vitamin C, which prevents scurvy, is twice as plentiful in strawberries as in orange juice, report Mary Mann Kirk and Dr. Donald K. Tressler, of the New York State Agricultural Experiment Station, according to a Science News note in SCIENCE for September 20, 1940.

Raspberries and turnips rank with tomatoes in vitamin C content, the item adds. Blueberries, plums and peaches contain smaller amounts, with but a trace in blackberries, cherries and dewberries. Even the same fruit was found to vary greatly, for the skin contained two to four times as much proportionally as the meat. Because the weight of the skin is so small a percentage of the entire fruit, however, it actually supplies a very little of the vitamin.

## NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla.

"As measured by the oil content of the fruit it is later and indications are that dropping of the fruit will be later in general all over the entire area than last year," he writes from the U. S. Field Laboratory for tung investigations on September 21st. The rainfall for the growing season is to date, however, about six inches less than the 56-year normal and it is felt that this shortage of moisture has hastened maturity as compared to what it would have normally been. It is felt, therefore, that the season of maturity will only be about two weeks late instead of three to four as might have been expected from the very late date of blossoming.

"Dr. Drosdoff has been studying the effect of fertilizer placement with respect to fixation of N, P, K, and finds that phosphate is being rapidly fixed in all soils except where there is an initially high amount present as in the Gainesville plots. The potash also is either being rapidly fixed, or taken up by the tree or leached from the soil, possibly depending on the type of soil. For example, on the Norfolk sand plots a low test was obtained even when the sample was taken right through the band where the fertilizer was applied two months previously. In the plots at Cairo on Red Bay sandy loam the second sampling after fertilization indicated a considerable amount of the potash had been fixed, leached, or taken up by the tree since the first sampling after fertilization.

"In the phosphate correlation tests on the young budded trees at Bogalusa, the soil before fertilization was very low in available phosphate but immediately after the fertilizer was applied at the rate of one ounce up to sixteen ounces per tree, all the soils tested high to very high. At the end of six weeks, another sampling was made and the treatments of four ounces to sixteen ounces still showed high to very high in all instances except one, while the one and two ounce treatments averaged low to medium."

Rulon D. Lewis, Albany, Ga. (Soil fertility investigations)

"During the period from September 16 to 21, pecan orchards from Fort Valley to Albany, Ga. were visited and observations made on foliage condition of trees and on soil moisture. We are having a dry spell and the soil moisture is approaching the wilting point and trees are beginning to lose their foliage in crowded and uncultivated orchards. Orchards look well where moderate applications of a well balanced fertilizer has been applied and the trees cultivated often enough to keep down grass and weed growth."

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La.

(Tung investigations)

"Fall budding of tung trees has been begun by Mr. Merrill, Mr. Slick and a crew of workmen who are acquiring skill in this operation," he writes from the U. S. Field Laboratory for Tung Investigations on September 21st. "Budwood from 20 odd of the frost resistant trees selected in the fall of 1939 has been gathered by Dr. Angelo. From the experience in the budding of tung trees that we have acquired thus far, it appears that the principal hazard is that of bad weather of one kind or another--drouth, frost, or low winter temperatures which injure and weaken the budwood and stocks. At present the safest plan seems to be to bud in late August or early September, and protect the buds by mounding with earth. Budding would have been commenced earlier this season except that growth of our seedling trees in the nursery was rather slow and they did not attain sufficient size until the first or second week in September...Mr. Kilby has taken over the work on relation of summer cover crops to soil moisture and in turn to the filling of the nuts and percentage of oil in the fruits. Mr. M. D. Parker, who began this work a few weeks ago, has resigned in order to accept an attractive position with the Bureau of Immigration. It was quite evident on September 13, that in three separate replications the surface foot of soil was considerably more moist in plots where the cover crop was cut August 20, than where it was still standing. A rather protracted drouth was broken, on September 20 with a good rain. Hence it is unlikely that this week's samples will show any differences."

Milo N. Wood, Sacramento, Calif.

(Almonds, walnuts)

"Some attention has been given to the almonds in the field and to various orchard troubles that seem to be on the increase," he reports for the two weeks ending September 21. "The portion of the nuts damaged from peach worm this year is small in comparison to the large quantity damaged last year. Brown rot has done damage in sections especially on the Drake variety. As a rule, however, brown rot damage will not reduce the total crop to any appreciable extent. Shot-hole fungus is bad in some sections this year. This is especially the case where the rain washed the sprays off soon after their application. Spraying in some orchards seems to have given good results. Mites or so-called red spider have been especially bad this year and seem to be doing considerable damage over a large amount of territory. It will be an excellent year from an experimental standpoint to test the spider resistant qualities of our new Jordanolo hybrid almond...At the present time and for two or three weeks perhaps, we are obtaining data on the walnut pollination work. From a dichogamy standpoint it is interesting to note that the California black walnut pollen serves effectively in cross fertilization from a crop production standpoint, but that pollen from the eastern black trees has very little value from that viewpoint."



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### NUT INVESTIGATIONS

Clifton W. Van Horn, Tucson, Ariz.

"The pecan aphid problem is continuing to be one of our important interests here," he writes September 28th. "During the past week apparently another climax has been reached in infestation. Seemingly there are quite definite cycles and whether it is increase in population or just in activity I do not know. The pecan trees glisten again with the covering of 'honey-dew.' Possibly this condition is associated with greater activity following the rain of the preceding week.

"Humble and Halbert pecans are showing signs of maturity. One recent sample of the Humble showed as many as 14 percent of the shucks already opening. The Halbert variety is not opening quite so rapidly but is coming along nicely. Some germination has already been noted in the Halbert nuts.

"Growers are making preparations for harvest. One grower is expecting to start harvest operations on October 10th, starting with the Halbert variety. We will harvest out Humble nuts here at the station sometime next week. Ethylene gassing of this early harvest will be practiced."

### NEW TUNG FIELD STATION AND LABORATORY

As you have probably noted from recent News Letter reports from Dr. George M. Bahrt, work at the new field laboratory for tung investigations at Fairhope, Ala. is now in full swing. This laboratory will supplement the work of the other tung laboratories at Bogalusa, La., Cairo, Ga., and Gainesville, Fla., and will have to do chiefly with the effect on tung trees of what are known as the "less common" fertilizer elements.

These elements include iron, manganese, copper, zinc, magnesium, boron, barium and titanium. The object is to determine which of these elements are beneficial to tung trees, the minimum amount necessary to obtain results, and the maximum that may be applied with safety. Tests will be conducted with mature bearing trees, with seedlings in the nursery, and with cover crops in the orchard, according to Dr. Potter's present program. Plots have already been established in Mississippi, Alabama and western Florida. In cooperation with the laboratories at Cairo and Bogalusa, this work will be extended to the whole tung belt.

Although, as indicated, it is expected that most of the work at Fairhope will deal with "minor" or "less common" elements, tests with the common plant nutrients, nitrogen, phosphorus and potassium, and other investigational work in tung orchards will also be conducted as opportunity permits.

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NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

"A field day for those interested in pecan production was held on Tuesday, September 24," he writes from the U. S. Pecan Field Station on September 28th. "There were more than 100 persons in attendance and all seemed to be well pleased with the occasion. Short talks on the work of the Department were made by the members of the staff. Dr. H. L. Crane summarized the pecan investigations of the Division as a whole. I explained the pruning experiments and the plan of the cultural experiments. Dr. H. E. Hammar reported on the influence of cultural treatments on soil nitrate-nitrogen. Mr. F. N. Dodge reported on the influence of cultural treatments on the tree growth and yield of pecans, and on the variety studies. Dr. A. O. Alben reported on fertilizer experiments. Mr. H. E. Parson reported on the experiments for the control of foliage diseases. Following these reports a tour of the experiments on the station was made, and then an inspection of the spraying experiments in the Webb orchard and the spraying, cultural, and spacing experiments in the J. H. Fullilove orchard."

John H. Painter, Cairo, Ga.

Writing from the U. S. Field Laboratory for Tung Investigations on October 5th he says: "In this particular section, the tables are completely reversed from last year. A high percentage of the growers of tung also have pecans and last year they got no return from tung but good returns from pecans. This year, on the other hand, there is practically no pecan crop but nearly every one has a good crop of tung and this is just another example of the advantage of diversification of crops, which practice, I am glad to say, is more common in Grady County than any other county in the State of Georgia.

"The City of Cairo, Ga. received quite a nice editorial write-up in the Atlanta Journal of October the 4th, based upon this fact, that through the farsightedness of the merchants of Cairo and other influential citizens, the advantages of diversification of crops has been constantly brought to the attention of the farmers, and where they have responded to the invitation to diversify, adequate means for disposition of their crops have been established in Cairo. For example, cotton gin, syrup plant, pickle plant, cannery, peanut butter plant, and a tung oil mill.

John R. Cole, Albany, Ga.

"Less than 1. inch of rainfall was recorded (to be exact, but .65") in the Taylor orchard during the month of September, but our trees remained in excellent growing condition. However, where a good cultural program is not being carried out in the orchards in the vicinity of Albany, severe injury has resulted to the trees."

## NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The bulk of the filbert crop has now been harvested," he reports for the week ending September 21, 1940, writing from the U. S. Fruit Disease Field Laboratory. "In general, the nuts are large and well filled. In some orchards loss from worm infestation is assuming alarming proportions."

## ADMINISTRATIVE NOTES

"Impressions" A story is told of a clergyman whose favorite topic was the desirability of water baptism. He usually managed to introduce the subject into every sermon. One day, however, he was called upon to make a brief talk in connection with the Red Cross roll-call. "We've got him this time," some of his flock whispered to each other. "He'll never be able to work in anything about water baptism in connection with this talk." They were mistaken. After a short outline of the Red Cross project, the clergyman paused and looked around. "Since we still have a little time left," he went on, "I'd like to make a few pertinent comments regarding water baptism..."

Elsewhere in this issue (we hope) you will find a little sermon on letters of authorization and their use. But since we have some space left here, we'd like to add a few comments regarding the unusually--and undesirably--large number of requests for amendments to travel authorizations that have been made recently because, as the traveler puts it, he was "under the impression" that his letter of authorization contained authority for him to do this and do that. It didn't.

While there may be once in a great while a sound reason for such things to occur, it follows rather inevitably that when they do occur it is because the letter of authorization has not been carefully read. A memorandum from the Office of the Chief of Bureau, commenting on the recent frequency of these "under the impression" requests for amendments to letters of authorization, points out that a letter of authorization is furnished to the individual for his guidance and he is expected to read and abide by it. The memorandum adds that the point is gradually being reached where this matter of "impression" as to what a letter of authorization covers is beginning to carry very little weight. Doubtless it is true that in most cases this explanation for the need of an amendment is rather "thin", since it is only reasonable to expect that a worker in travel status will understand clearly what he is authorized to do.

The point--if not the moral--of this should be quite easy to comprehend!

## ANNUAL LEAVE

Under the present law, an employee may accumulate a total of 60 days' annual leave, which may be carried forward on December 31. With the current leave that becomes available January 1, he could have available a total of 86 days of annual leave. He has a legal right to this, but annual leave must necessarily be arranged with regard to the needs of the work on which he is engaged. An employee cannot arbitrarily determine when he will take the annual leave to which he is entitled. This fact has been emphasized by a recent decision of the Comptroller General to the effect that the head of a Department may "require any individual employee, or class of employees, or any or all employees of a particular unit or of the Department to take annual leave at any time and for any period within the limitations of the statute as the needs of the service may require." This decision is based on the following quotation from the Annual Leave Act: "...The annual leave herein authorized shall be granted at such times as the heads of the various departments and independent establishments may prescribe..."

In a memorandum to heads of divisions, dated September 18th, Dr. Auchter calls attention to this decision and points out that it is obvious that continuing consideration must be given the problem by administrative officers if they do not wish to risk serious disruptions of their work. He suggests that all administrative officers supervising other workers give the matter of annual leave careful consideration with a view to the utilization of the leave in such a way that the employee will receive a maximum of profit and the interruption to the work of the Bureau be kept to a minimum.

The matter is important, too, because of the responsibility of section leaders and others in key positions for the work under their direction and, in this connection, the necessity of having adequate personnel in the groups present at all times to do the necessary work. Responsible officials should ascertain the wishes of the workers under their supervision with respect to their annual leave in order that the granting of it may be properly coordinated with the necessities of the work. A general review of the annual leave situation should be made at least once a year, preferably early in the calendar year. A failure to make such a review may cause serious embarrassment to the Division--especially in the event of reductions in appropriations by Congress.

Remember also that while annual leave should be arranged with due regard to the needs of the work, it is still the employee's legal right and if requested arrangements would have to be made so that he could utilize it before he would lose it. Where temporary employees are entitled to annual leave, make certain that they get it before the dates on which their appointments terminate.

## ADMINISTRATIVE NOTES

Letters of  
Authorization:  
Ideal--and real!

I judge that the ideal letter of authorization would read about as follows: "You, and such assistants as may seem desirable, are authorized to perform travel in the United States and foreign countries whenever considered necessary, and will be allowed such expenses for travel, subsistence, supplies, etc., as are considered essential." Since this particular form has not yet been adopted, the next best thing is to READ YOUR PRESENT LETTER OF AUTHORIZATION and live up to its provisions!

Sometime ago I had the privilege of attending a lecture on this subject by Mr. Allanson; in fact, I was the only person in the audience. It seems that his idea is that a letter of authorization simply establishes a credit and the amount of that letter should be treated exactly as your checking account--probably a lot more carefully! Its general provisions (itinerary, type of expenses, etc.) should be taken just as seriously as any other instructions that might be given you officially. Unless an employee keeps a careful check on his expenditures under a letter of authorization, and lives up to its general provisions, the letter becomes practically useless, for the Bureau's accounting must rest upon the assumption that when a man is given a definite authorization he will live up to it. A close tab on money available in an authorization is just as important to an individual as the knowledge of the balance under his checking account--and then some! Pressure of work cannot be accepted as an excuse for failure to keep such a check, for there is no more important thing, if our affairs are to continue on a sound basis, than to know constantly just where we stand financially.

In most cases of suspensions resulting from an employee's failure to keep within the provisions of his authorization, there is not the slightest question about the accuracy of his explanation for the neglect; nor any question of the absolute propriety of his use of the funds involved. The question is merely one of bookkeeping. No employee should expend funds, perform travel, use a personally-owned automobile, or incur expenses of any kind until he is sure that the work is authorized. This means that every employee should have a copy of his authorization and, preferably, carry it with him constantly on his travels. One of our workers keeps a tab on expenditures by noting them on the back of his copy of the letter of authorization--in pencil, the record of daily expenses; in ink, the final totals when vouchers are sent in.\* In this way he knows when to ask for an increase. The Business Office, of course, is not in a position to increase letters of authorization automatically, even if funds are available, since it does not know what vouchers (Liabilities) are still outstanding.

Read your letter of authorization--and if funds are getting low, the time covered is not sufficient, the itinerary too restricted, the authority for expenditures too narrow--write the Business Office at once. Do not incur unauthorized expenditures and trust to luck to get reimbursed; that might be just too bad!

\*For station or general letters of authorization, use the ring-binder record sheets supplied by our Business Office.

Vol. 12 No. 20

October 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII U. S. Horticultural Station, Beltsville, Md. No. 21  
November 1, 1940

Soil Professor Fernald of the Gray Herbarium, Harvard University, used to tell of a letter he received, addressed to "Professor Gray Hibernian, Curate of the Garden, Boston, Mass." and reading: "Dear Professor Hibernian: Our class has a project on the flowers of Massachusetts. Please send us on the enclosed sheet all you know about the above subject, and oblige."

It wouldn't require a sheet to list all we know about soil productivity ratings, but thanks to an excellent Press Release concerning a talk by J. Kenneth Ableiter of the Bureau of Plant Industry before the National Conference on Land Classification we are able to give you something more on a topic that appears likely to be of interest to most of you in view of the interrelation of soils and plant, animal and human nutrition.

"Rapid changes in world markets for agricultural products and the pressure of agricultural adjustment programs in the United States have emphasized the practical value to farmers of the productivity ratings which are a relatively recent feature of soil surveys, according to J. Kenneth Ableiter of the Bureau of Plant Industry, who explained the ratings October 10th before the National Conference on Land Classification at Columbia, Mo." says the release. "The productivity ratings are a definite aid in making farming more flexible by providing the individual farmer with definite information as to alternate uses of the particular soils and combination of soils on his farm. By presenting information as to what the same type of soil has yielded on other farms and under specific kinds of management and treatment the productivity ratings often suggest changes in cropping methods which farmers might otherwise overlook.

## SOIL PRODUCTIVITY RATINGS HELP FARMERS (continued)

"The productivity ratings as they are now developing are included with the soil surveys and the soil maps which the Bureau of Plant Industry publishes in cooperation with the State Experiment Stations. The soil map provides a detailed inventory of the types of soil on each farm and the ratings give an idea of what farmers have been able to get out of such soils. The map gives the area and boundaries of the soil types, and it is not unusual for a single field to include two or three distinct soils within its boundaries. The productivity of the several soils may vary widely and in some cases the fields might better be divided along soil boundaries than according to surveyor's lines. The productivity ratings often suggest such changes and also changes in cropping and management programs that fit better with changing market conditions and with current results in agricultural research.

"The productivity rating of a given soil type is based primarily on yields of crops in the practical experience of farmers who have been farming on this type of soil. There are several thousand types of soil in the United States, and the information available on any type is scattered. The productivity rating is an effort to assemble this information in a form useful to farmers. It has also proved useful to land use planning committees, to tax officials, to financial institutions and in some instances to industry in locating land adaptable for a specific purpose.

"An accurate soil map, together with these productivity ratings, gives a modern farmer knowledge that his European or colonial forebears could obtain only after years of trial and error experience.

"To prepare a productivity rating the field party collects as much information as possible from each farmer as to his experience and the yields of various crops on each type of soil on each farm. This is checked with similar information for all the soil of a given type in the vicinity. Observations of county agents, AAA records, elevator and gin clearings, add detailed facts.

"These results are compared with records of the same type of soil in other areas where rainfall and climate is generally similar and is checked and revised by State soil and crop scientists, familiar not only with the soil but with the alternate crops that can be grown on such soils and the alternate ways of soil and farm management. The final results form a digest of the information available. Recent soil surveys have been published with productivity ratings and they will continue to form a valuable feature of reports to be published."



## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"The budding of more than 15,000 nursery trees was completed October 5th. The primary objective has been to obtain as many trees as possible of the most desirable of the 1939 selections, chosen chiefly for frost resistance. The trees budded this fall will provide budwood for multiplication of these varieties a year from now. A number of additional trees were budded from certain clones derived from 1938 selections of which we previously had an insufficient stock. Finally a block of about 5,000 trees was budded for use in cold resistance studies. These are divided into 24 plots, each containing a minimum of 40 buds of each of four clones. The 24 plots will be given differential fertilizer treatments during the season of 1941 to determine its effect upon resistance to low temperature during the ensuing winter...In spite of the fact that two years ago there was a widespread opinion among tung growers that budded tung trees are less desirable than seedlings, the interest in budded trees now seems to be spreading like wild fire...

"During the September 21 to October 5 period Dr. Angelo continued his scouting work in the orchards and also the gathering of buds for propagation of the best parent trees. In addition, during the first part of October he prepared the ground for our winter cover crop tests. Last year in certain orchards in this area it was observed that basic slag gave results very much superior to an equivalent amount of super-phosphate when applied to hairy vetch. The difference is probably due to the calcium in the basic slag, but it is quite possible that manganese and magnesium, which are contained in the slag, may have a bearing on this result. We have therefore set up a fairly elaborate series of winter cover crop plots in which fertilization with basic slag is compared to super-phosphate alone and super-phosphate fortified with calcium, magnesium and manganese, singly and in combination. Each treatment is applied to a plot 20' x 20', and the plots are arranged in a randomized block with four replications in each orchard."

George M. Bahrt, Fairhope, Ala. (Tung investigations)

"During the October 13th to 19th period an examination was made of the area in Mr. Rosecrans' orchard where the tung trees are stunted, unhealthy, or missing; and a sticky, compact clay layer was found at a depth of 12 inches. The trees had been planted in a cold air pocket and the land was not well drained. In the same orchard where the water and air drainage was better and the compact clay layer did not exist at this shallow depth, the trees were in good condition."

## NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"The month of September has been cooler and 50 percent dryer than normal," he writes for the period from September 23 to October 5. "As a result, tung fruit seems to be maturing or dropping much more rapidly than usual.

"The oil content of the kernels on a fresh weight basis was 38.06, but on a dry basis was 65.17. However, when all of the oil determinations made on tung kernels during the last several months were expressed as percent of the dry weight, it was learned that a peak was reached September 6th, 74.23 percent, with decreases on September 20th and October 4th to 68.47 and 65.17, respectively. The apparent increase indicated on a fresh weight basis from week to week is due to both the decrease in the percent of moisture in the kernels and to an actual increase in quantity of oil present. That the latter however, does not actually occur is evidenced by data based on the actual oil present in the kernels of 25 fruits analyzed at two week intervals through the growing season. The increase in the actual quantity of oil present in the kernels after September 6th was found to be due to the increase in the size of the kernel and not to an increase in the percent of oil in the kernel tissue."

John H. Painter, Cairo, Ga. (Tung investigations)

"One or two interesting things have been brought to light in a review of our experiments in connection with the germination problem. We now feel that the best explanation for poor germination in the nursery at Lloyd, Fla. is to be found in the long dry spell immediately before and after the planting date of the nursery...

"Another reason for generally poorer germination last year than the previous year, is the high percentage of aborted embryos or complete lack of embryos in the tung seed. Our test on the period of receptivity of the stigma of the tung flower has brought forth another interesting observation. We have found that there was no significant difference in the percentage set on stigmas for a period of one day before the flower was opened up to and including the eighth day after opening. However, the resulting fruits from this test have been dissected with the result that it was noticed that a high percent of undeveloped embryos occurred in the cases of all fertilizations made on a certain day. On checking this with our weather records, we have found that this day was one of the cold days. This, then, would probably account for the high percentage of undeveloped embryos in the tung seeds produced last year, because during blossoming time we did have a great number of cold days, whereas such was not the case in 1938 and the number of undeveloped embryos that year was negligible."

## NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on October 5th he says: "The chestnut harvest was completed this week and the nuts are now all in storage. The highest yielding tree produced 89 pounds and the yield from all trees totaled 740 pounds. Both of these totals are less than last year.

"Pecan trees in this region are more and more showing the effect of the drought. Trees which have had fair care are now defoliating rapidly and the remaining leaves are yellowing. This defoliation is more striking on bordeaux sprayed than on unsprayed trees. The saving feature of the condition is that the trees which have received our recommended culture and spray program are in almost as good condition as in midsummer."

B. G. Sitton, Shreveport, La.

"Pecan trees in many orchards have defoliated to a considerable extent in the past week," he writes October 12th. "In the block in the J. H. Fullilove orchard the close spaced trees are almost bare of foliage, the unsprayed trees in the wide spaced block have lost about 50 percent of their foliage, while the bordeaux sprayed trees still retain the greater part of their leaves. The only noticeable defoliation of these sprayed trees is in the very tops. Defoliation in orchards started first on orchards which have not been cultivated or which had the first cultivation delayed in the spring until after the leaves of the pecans were well developed, but now defoliation has become serious on some orchards which have been cultivated."

F. N. Dodge, Shreveport (Robson), La.

"Notes were taken on foliage condition which shows that defoliation and leaf scorch has progressed rapidly the last two weeks, he writes October 12th. "The first defoliation on Stuart trees on this station was observed two months ago. However, very little defoliation took place during the first six weeks following the initial defoliation. This is contrasted with 1938 when the trees suffered complete defoliation within the six weeks following the initial defoliation. Contrasting meteorological differences between these years can be seen which could account for the differences. This year considerable rainfall with many cool cloudy days of high humidity occurred during the period following the initial defoliation. In 1938, however, the weather was dry with high temperatures.

## NUT INVESTIGATIONS

F. N. Dodge (continued)

"With few exceptions the order of the defoliation in respect to varieties, soil types, cultural and spray treatments, is following through the same as that recorded here for the past four years. Leaf scorch is worse on Schley and Success trees this year than it is on Stuart trees, whereas in past years it has been worse on Stuart. Bordeaux spraying has checked the scorch materially, and nitrogen deficiency has made it worse. This is shown by the severe scorching of Schley and Success trees in the low nitrogen plots of Bermuda, Kudzu, or rye; and far less scorch on nearby trees in winter legume summer cultivated plots. Leaf scorch is much worse on the trees in the clay soil than it is on the trees in the sandy soil.

"The defoliation on Stuart trees does not seem to be associated with the scorch, but as usual there are big differences in the amount of foliage on the bordeaux sprayed and on the unsprayed trees in the clay soil. However, only a slight difference can be seen between the bordeaux sprayed and the unsprayed trees in the sandy soil. Here, all Stuart trees have excellent foliage at this time whether bordeaux sprayed or not. These observations which have been substantially the same for four years, show that cultural practices and soil type can be important in the control of premature defoliation of pecans."

Clifton W. Van Horn, Yuma, Ariz.

"The concensus of opinion is that our crop of pecans here in the Yuma valley is maturing at least 10 days earlier than normal," he writes October 12th. "Whether our maximum quality is being reached this much earlier than normal will not be known of course until we can get our samples analyzed this winter. Possibly it is just a difference in the visible signs of maturity but I do not think so. I feel reasonably sure that we are actually about 10 days ahead of last year.

"Germination of the nuts on the tree is showing up in most of the orchards in about the same degree as the way the orchard has received water. Those with a higher moisture content in the soil, larger trees with the greater amount of shade, or where more fertilizer has been used are subject to greater losses from pre-harvest germination.

"The Burkett variety seems to be causing the most trouble again with its high percentage of germination, but the trouble is also rather serious with the Halbert."

## NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Walnut harvest is now in progress in practically all parts of Oregon and Washington," he writes from the U. S. Fruit Disease Field Laboratory on October 12th. "According to the latest Government crop report, the walnut crop in Oregon and Washington is estimated at 4,800 tons as compared with 4,400 tons in 1939, and an average of 2,340 tons for the years 1929 to 1938 inclusive. Opening prices for the Oregon 1940 walnut crop have been announced. Prices range from 1-1/2 to 2-1/2 cents higher per pound than last season."

## CHEYENNE HORTICULTURAL FIELD STATION

The first week in October had a couple of days when a heavy fog reduced visibility almost to zero at the station, but it lifted enough to reveal the approach of Roy Gillette, who is making a brief visit to some of our stations. Another surprise visitor to the station during the week was Dr. H. C. Thomson of the Department of Vegetable Crops, Cornell University, Ithaca, New York, well known to many of us by reason of his former service with the Division.

Wednesday, September 25, produced a shower of leave slips at the station, most of the workers taking the morning off to attend the wedding of Robert W. Howell, formerly in charge of clerical administrative details at Cheyenne. Bob and his wife left for Ithaca, N. Y., where he is now employed.

Dr. Powers' and his crew finished taking records on ripe fruit weight in the genetic plots of tomatoes the middle of September. Some of the varieties seem very slow in ripening, thus making them unsuitable for Cheyenne and vicinity.

Dr. Hildreth and Mr. Hastings have completed selecting in the aster plots. Plants showing symptoms of virus diseases were rogued out. A truckload of blooms from discarded plants was turned over to the Fort Warren hospital.

## ----- POLITICAL ACTIVITY -----

Attention is called, "most emphatically," by Secretary and Bureau memoranda to the limitations regarding political activity imposed on Government employees by the Hatch Act. Since Personnel Circular 84 concerning this matter was widely distributed last January and February it should be easy to find a copy for reference, is needed. An alternative to reviewing the circular is, of course, in meticulously refraining from anything that, by any interpretation whatsoever, could be construed as political activity.

## DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The cranberry harvest is nearly completed in spite of a scarcity of labor," he reports October 15th. "Picking will be completed at Whitesbog during the current week. Many growers report that their crops have not come up to the estimates, so it is very doubtful whether the total crop for the State will reach the expected 100,000 barrels. No frost damage has been reported. Growers have flooded their bogs after picking, for insect control, wherever sufficient water was available.

"Mr. Bain arrived from Beltsville September 17th and remained until the 29th, during which time most of the berries were harvested from the hybrid seedlings. There remain only about 100 seedlings on which the fruit required more color before being picked. The crop is much lighter than in 1939, due largely to winter injury of uprights and buds, caused by lack of water for a seasonable flood early last winter. The amount of rot at picking time was low. Mr. Bain supervised most of the picking, for I spent the last week of September in the laboratory, working on required reports and questionnaires."

John C. Dunegan, Fayetteville, Ark.

Writing from the Fruit Disease Field Laboratory on October 5, he reports: "Field work included the examination of a number of apple trees which had rust cankers on them in 1939. Measurements and microscopic examination of these cankers indicates that the rust fungus does not survive the winter and produce a second crop of aecia. The dead tissue surrounding the rust lesions was invaded by the black rot fungus (*Phyalospora obtusa*) and this fungus in many instances was responsible for a considerable extension of the cankered area with the consequent weakening of the twigs...

"Commercial growers seem encouraged by the fact that the prices for fruit are higher than last year, but all through the district are complaints about the severity of the codling moth infestation. In many of the orchards the crop is badly damaged by 'worms' and this fact is undoubtedly responsible for the higher price being paid for good quality fruit this season. Many growers complain of severe codling moth damage even where eight sprays were applied during the season.

N. H. Loomis, Meridian, Miss.

"The final harvest of muscadine grapes was made the week ending October 5th. The harvest records confirm the results of many other workers that spur pruning gives greatly increased yields over cane pruning."

## DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Field Laboratory on October 5th he says: "Cranberries from experimental spray plots were screened this week. The percentage of rotten berries found was extremely low, amounting to only a few tenths of one percent even in berries from unsprayed plots. Such a condition for berries from the bog at Assonet is very unusual as there is nearly always 10 to 15 percent of rotten berries at the time of picking and sometimes twice as many. The exceptionally fine condition of the berries this year is due to a very dry summer, almost no rain during July and August, and low temperatures during these months.

"Most growers report that the number of berries picked was below the amount estimated. If this is generally true the crop for Massachusetts will hardly make the 540,000 barrels estimated. Berries in general are of smaller size this year than in average years. Prices are relatively high, \$12.50 to \$15.00.

"Cultures made early in August from very small berries which had apparently set but which never developed further, when at a stage to be identified showed *Guignardia* as apparently the most abundant, but with *Godronia* and *Diaporthe* also present. *Guignardia* has never been found to be of importance as a cause of rot in berries from experimental plots but may be important as a cause of 'blast' buds, flowers or very small berries.

"The matter of salt injury to cranberry vines came up in August when a grower reported that cuttings set out this spring were dying. The trouble arises from salt brought in by the high tide which came with the hurricane of September 21, 1938. This grower had a great deal of trouble on the bog last year. About half the cuttings that were set out in May 1939 were killed by salt in the soil. The cuttings apparently rooted satisfactorily and sent out new shoots which grew well during June and early July but with the onset of dry weather during the middle and latter part of July the new shoots began to wilt and die. The areas in which the vines died in 1939 were replanted again this year and behaved just as they did last year. The areas in which the vines are now dying are much smaller than those of last year and are definitely limited to slight depressions into which the water from higher areas has drained. It seems rather strange that enough salt to kill vines should have remained in the soil as the bog was flooded all winter and there was also considerable rain during April and May of this year. A few other new bogs which were flooded with salt water during the hurricane and then planted the following May had more or less trouble last year from salt in the soil and lost some vines but similar trouble this year has not been reported from any of the other bogs."

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Nearly all of the 700 cultured embryos from the tented USV 8 tree have been removed from the refrigerator, and an excellent stand of seedlings has been obtained, although many exhibit abnormal growth," he reports September 30th. "When handled in the usual way, seeds of this selection fail to germinate. Loss of seeds due to contamination has been less than 1 percent.

"Best success has been obtained where the cultured embryos are placed in the refrigerator immediately, and the seedlings are removed as soon as growth starts, without waiting for the elapse of a definite period of time, such as 12 weeks. Not all seeds require the same amount of after-ripening. The bottles are then placed against the north wall of a building where light intensity is higher than in a laboratory, and the heat of direct sunlight is avoided. From the bottles the seedlings are transplanted to sand or a sand-soil mixture, and watered with a nutrient solution. The use of Vitamin B1 is also being tried. These seedlings will now have to be held over winter in the greenhouse until they can be planted in the field."

J. R. Kienholz, Hood River, Oreg.

"Anjou pear harvest was started at the Experiment Station farm on September 3. A poor packout record was experienced and is being experienced generally throughout the Valley," he reports for the month of September. "Considerable frost russet, blackend, and worm damage is causing an average of about 60 percent packout. Many orchards are running considerably under this figure. Difficulty in obtaining steady pickers and some rainy weather has added to the grief. Normally, Mr. Childs harvests his own crop with a crew of about 25 to 30 pickers. This year in three weeks' time he has already hired 115 men and the crop is still unpicked. Apple harvest is under full steam at present.

"Results on the effect of spray materials in relation to fruit injury to Anjou pears are very discouraging this season. Border-line frost injury makes the evaluation of observations very difficult. Sprays applied in a non-scabby orchard show considerable commercial russet in the copper acetate, copper phosphate, dry-mix sulphur, and dry lime sulphur plots. Copper acetate appeared promising for Anjou pears during the last year in a dry season, but distinct spray injury was apparent on fruit and foliage during our present year when a rainy spring was experienced. This is the first season that copper phosphate has not been outstanding in relation to fruit russet. It apparently has caused an intensification of the russet on the fruit which was caused by other factors. Sulforon (DuPont sulphur) and phenothiazine showed very little injury.



## DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz (continued)

"Plant Hormone Sprays.--Because of the severe dropping occurring with Delicious apples, a trial spraying on naphthalene-acetic acid was thought advisable. It is evident from early results that the material was applied somewhat later than ideal, but after 48 hours time the results are certainly startling on the earliest sprayed trees. Sprayed trees dropped an average of 21 apples; unsprayed dropped an average of 154. On a later plot in which dropping had occurred for some time it required six days to tighten the stems but then in contrast to the 154 drop average on check trees, the sprayed trees dropped an average of only three apples. If fruit was worth anything it would be a money maker. Even to one used to spraying, however, it seemed silly to carry a test tube only one-quarter full of liquid to pour into a hundred gallons of spray. Considerable quantities have been reported sold in liquid form in the Yakima district at \$1.50, sufficient for 100 gallons of spray..."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on September 30th he says: "I have found Isariopsis leaf spot serious on some seedlings from a cross between the varieties George and Goolobie, George being the Muscadine parent and Goolobie the Vinifera parent. The vines have lost about one third to one half of their leaves, due, I think, to leaf spot. I examined the variety George in the variety collection, but did not find any evidence of infection. I have not seen this leaf spot on any Muscadine varieties. It appears to be confined to the hybrids only."

"The brownish discoloration and blemish on white grapes I mentioned in a previous report, turns out to be an early stage of bitter rot, Melanconium. Varieties differ widely in their susceptibility to this rot."

"Last week Mr. Dearing received some Scuppernong grapes from Tarboro, N. C. which he referred to me for examination. There were numerous warty blemishes and examination revealed the presence of pycnidia of the black rot fungus, Guignardia. This is the first time I have found black rot on Scuppernong fruit. I have observed the Scuppernong here at the station the last four seasons, but have never found it on the fruit; but infection has been moderate on the leaves."

"During the month of September we had only 1.1 inch of rainfall at the station. During the last half of August we had 1.83 inches. I believe the soil is dryer now than it has been at any time this summer."

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### MAKING OUR OPERATIONS EFFICIENT

Our neighbor, the news letter of the Fruit and Vegetable Division of the Agricultural Marketing Service, has in its October 4th issue some very much to the point remarks about making our operations most efficient under the conditions that confront us today.

"Remember the story of the three stone cutters?" it says. "When asked what they were doing, the first said he was putting in eight hours a day; the second, that he was making a living. The third looked up with pride and said: 'Why, I'm building a cathedral!' The main difference between these men was that number three had caught the full significance of his work and realized its importance. He had that loyal and enthusiastic outlook without which neither cathedrals nor any other worthwhile structure or organization can be built.

"This attitude on the part of all of us is what is required to keep our Division, Service and Department functioning on the most efficient basis. With it we can make the greatest use of our facilities and resources. Certainly, under the conditions with which we are confronted today, we need to give every consideration to making our operations most efficient.

"We cannot do this without 'knitting' together our different operations from Divisional viewpoint wherever possible. I do not mean that we should dispense with our different sections needed for administrative reasons. Our employees should not feel, however, that their responsibilities to the Division are limited in the narrowest sense to the particular work of the section to which they may be assigned.

"As in the past there will be many situations, especially in the field, that can only be met most effectively through the closest kind of cooperation among our employees on the ground. Such a cooperative spirit, together with an attitude of service and unfailing courtesy in our personal and telephone contacts with the public will enable us to build our service well."

### NOTICE OF DEATH OF CONTRACTORS

Attention is again called to the necessity for notifying our Business Office immediately following the death of any person with whom the Division has a contract, particularly a contract under which payments are made by the Government. No payments may be made in the event of the death of a party to a contract until all legal requirements have been met--matters that often take a good bit of time. It is very important, therefore, that the Division's Business Office be notified without delay in the event of such deaths, so that instructions on procedure may be given.

## ADMINISTRATIVE NOTE

The AAAS Meetings The American Association for the Advancement of Science will hold its meetings in Philadelphia, Pa., December 27, 1940 to January 2, 1941. Abstracts of papers to be presented at the meetings were to be in the hands of the secretaries of the various organizations the latter part of October or early in November.

It is very desirable, also, that the complete papers be sent in to Mr. Gould as promptly as practicable. All such papers should reach the Chief of Bureau by December 10, which means that Mr. Gould should have them a week or so earlier to give time for technical review by section leaders and the editorial section of the Division. Where lantern slides and other accessories are needed, or charts are necessary, they should be arranged for in ample time to avoid a last minute rush.

The general rules covering the preparation of manuscripts for outside publication (News Letter, September 1, 1940, page 209) are to be followed except that two extra carbon copies of abstracts for the Phytopathological Society are to be furnished, the rules of that society providing that "Members...must submit to the Secretary three typewritten copies (original and two carbon copies) of each abstract..." In addition, of course, we need the usual carbon copy on yellow paper for the Office of Information, and one on thin paper for Mr. Gilbert's files. For all papers except abstracts for Phytopathology, then, submit original, yellow carbon, and one white carbon. The section leader's office will prepare the usual form requesting approval of outside publication. (We are locking the stable door a trifle late in connection with these extra copies of Phytopathology abstracts, since they were supposed to reach the Society's secretary on or before November 1!)

November 15, 1940 is the deadline date when recommendations for attendance at Government expense must be in the hands of the Chief of Bureau, so they should reach Mr. Gould as early in November as practicable, with full information regarding the purpose of attendance, and the objects to be accomplished that justify payment of expenses by the Government. Such attendance will be very limited, however.

By December 10, we must submit for the approval of the Chief of Bureau the names of those who desire to attend the meetings at their own expense other than salary--that is on leave, if such authority is granted.

Manuscripts and requests for permission to attend the meetings should, of course, be sent to Mr. Gould through your section leader.

Vol. 12 No. 21

November 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII U. S. Horticultural Station, Beltsville, Md. No. 22  
November 15, 1940.

Grape Breeding The breeding work on eastern bunch grapes, started at Arlington Farm and being continued at Beltsville, is beginning to yield interesting results. The first fruiting of seedlings occurred last year, and this year additional seedlings came into bearing. Some of these have received very favorable comments from those sampling the fruit. A large-clustered, large-berried and nearly seedless white grape of excellent quality was particularly praised. The parentage of this grape was Niagara x Sultanina. Quite a few other seedlings from this same cross, showing entirely seedless or nearly seedless character, are being held for further study. Campbell x Ribier and Vergennes x Ribier crosses yielded large-clustered, large-berried blue grapes of outstanding quality and were rated high by the examiners. A Catawba x Ribier cross gave an outstanding blue grape of fine quality and several other interesting seedlings.

Among those derived from the crossing of eastern bunch grapes a very highly flavored, choice red grape, considered by many as the finest of this type ever tasted, resulted from a Manito x Caco cross, and several others from this same source showed outstanding desirable properties. Manito x Empire State gave a number of seedlings having fine cluster character, great productivity and good quality. Several interesting seedlings from Champanel x Manito, which it is believed may prove of value in the South, also came into fruit. Of especial interest was one seedling from a Catawba x Ribier cross that promises high value for ornamental purposes, the vine being very vigorous and the foliage a rich dark red. The fruit while not outstanding in quality was of good size and far from inferior in flavor. It should prove very attractive for pergola display. In the more recent breeding work special attention is being given to the development of superior grapes resistant to fungus diseases and some attention is also being given to the development of grapes resistant to the destructive leaf hopper.

## SUBTROPICAL FRUIT INVESTIGATIONS

T. Roy Young, Indio, Calif.

"Certain varieties of dates are predisposed to a loosening of the fruit from the perianth, which may result in an appreciable drop; or, if the loosened date remains on the bunch, may result in shrivel or insect or fungus attack," he writes from the U. S. Date Garden. "The Saily variety of date is notable in this tendency to loosen. In view of the work of Gardner, Marth and Batjer on apples, it was deemed advisable to test the effect of naphthalene acetic acid on this variety of date. For this purpose a 1 percent and .01 percent naphthalene acetic acid in lanolin were used. The treatments were first applied on August 6, 1940. At this time nearly all the fruit had partially turned yellow, had apparently ceased enlargement and most of it had lost all green color.

"By October 10, there was a striking difference in ripening as well as in drop between the check bunches and the bunches treated with 1 percent naphthalene acetic acid. There was a distinct though less striking difference between the checks and the bunches treated with .01 percent. The check bunches had lost 80 to 97 percent of the fruit and that which remained was ripe or badly shriveled. The 1 percent treatment, on the other hand, had retained from 38 to 83 percent of the total fruit and had resulted in a delayed ripening so that 20 to 70 percent of the total fruit was still in the khalal (pre-ripe) stage.

"Examination of the 1 percent treated fruits showed that they were firmly attached and in no case was there any appreciable shrivel. The khalal fruit had apparently continued to increase in size and in some cases there was a return of green color around the base of fruit that earlier had been entirely yellow. This continuation of growth may be the result of a stimulation of meristematic activity as observed in the bean by Kraus, Brown and Hamner."

## NATIONAL FRUIT AND VEGETABLE MARKETING COOPERATIVE

In speaking of the national fruit and vegetable marketing cooperative, which is now being launched, an editorial in the New York Journal of Commerce, October 30, says: "There can be no doubt that the organization of fruit and vegetable growers and shippers along national lines, to help stabilize the marketing of such products and to promote their consumption, is a wholesome development. The fact that large distributors assist in the organization of such a cooperative does not impair its usefulness, unless it is found that such assistance is tantamount to domination."

## DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

Writing from the cranberry and blueberry disease laboratory on October 31st he says: "The cranberry harvest on a few of the larger properties extended past the middle of October and one grower did not finish until the current week. So far as we know, however, the harvest is now completed. A few berries were frozen in bogs not picked before the 22d, but this will have no appreciable effect on the size of the crop. Estimates for the size of the crop are at wide variance, but the growers are in agreement that the crop fell far short of the preliminary estimates.

"The expansion of Fort Dix in connection with the National Defense Program is causing much uneasiness among the cranberry and blueberry growers. The acreage of these crops which has been taken over at the present time is very small but if the expansion reaches the total extent rumored, the effect upon the New Jersey cranberry and blueberry industries will be very considerable. It now seems not impossible that a large area, including even Whitesbog, New Lisbon and Pemberton, will be taken over by the military authorities, though it is hoped that this will not actually take place.

"We have visited a number of cranberry bogs, have taken some notes in the hybrid cranberry plantation, and have collected data from various growers and operators on the type of cranberry most needed at the present time by the New Jersey industry. Dr. Magness and Messrs. Demaree and Bain attended a conference at Pemberton on the 31st, in which about a dozen cranberry growers participated, to make plans for giving a second test to a limited number of cranberry hybrids."

E. S. Degman, Medford, Oreg.

"The gypsum applied last season at rates up to 2 tons per acre proved ineffective as a means of increasing the penetration of water. The application rate to these plots has been stepped up until now the maximum amount applied is 20 tons per acre."

## BLAKEMORE RATED FIRST AMONG STRAWBERRIES

"Doubtless God could have made a better berry, but doubtless God never did," wrote Henry Ward Beecher about the strawberry. Who can disagree with him, especially after having known the delights of strawberry shortcake! Because of the great national appetite for strawberries, countless varieties have been bred in the hope of obtaining the Utopian berry having all the excellent features of other varieties and none of their faults. Out of this multitude of strawberries, has risen one variety which is the unanimous choice of the nation's strawberry growers. The Blakemore (yellows resistant) reigns supreme over all..."

---American Fruit Grower, October, 1940.

## DECIDUOUS FRUIT INVESTIGATIONS

R. A. Lineberry, Raleigh, N. C.

"Fertilizer was applied to the crop-rotation and lime strawberry experiment on the Carter farm," he writes October 31st. "On the rotation experiment the fertilizer was applied on each side of the plants. The plants on the lime test were in a broad bed and the fertilizer was applied in a furrow in the middle of the bed. It is the dryest it has been in many years in eastern North Carolina. Wells have gone dry that have not failed in forty or fifty years. Several forest fires are burning, and in some places the soil is actually burning. Strawberries are in fair condition, but in some places they are beginning to die because of the dry weather. The Bureau of Agricultural Economics estimates the strawberry acreage for 1941 to be 7,800 for North Carolina. The acreage last year was 6,000".

U. S. HORTICULTURAL STATION, MERIDIAN, MISS.

Geo. P. Hoffman (Vegetable crop investigations)

"Harvesting and sampling of the sweetpotato seedlings were finished this week," he reports October 19th. "The low yields of marketable size roots in the L numbers (Louisiana seedlings) generally throughout the plantings suggests that this might in some way be tied up with the length of the growing season and possibly soil and moisture requirements. We wonder if other collaborators have observed this difference in their plantings?"

## NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"There have been a large number of sticktights this year in almond orchards," he writes October 5th. "In fact, the sticktight trouble is extensive enough to account for considerable quantities of inferior nuts and to affect the yield in many instances. It is probable that the total yield for the State will be at least 1,000 tons less than was estimated.

"I have been quite busy examining walnuts resulting from last Spring's pollination work. Probably all the work in connection with these experiments will not be completed until late this month. Walnut pollination work this year has suffered considerably owing to blight. It seems to me that I have seen more blight this year in walnut orchards than during any single previous year and it would not surprise me at all if at least one-third of the crop in some districts turned out to be culls and poor grade nuts. This no doubt will reduce the crop considerably below the original estimate.

"There seems to be an increasing interest in chestnuts in California. This year quite a number of young plantings are coming into bearing. Growers are expecting the usual difficulties in harvesting and storing the nuts, and we have been receiving a large number of inquiries concerning the best means of taking care of the crops."



## NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"All of our cover crops are showing a good stand but we are beginning to worry about them because we have received no rainfall for many days, and some wilting of the young plants has been noted," he writes from the U. S. Pecan Field Station and Laboratory on October 26th. "Temperatures have been relatively high and the soil is becoming very dry. Pecan trees that have received anything less than the best care are defoliating rapidly. Pecan harvest was started in earnest this week, but is still confined largely to the earliest maturing varieties.

"A small amount of time was spent in harvesting the bagged nuts resulting from our hand pollinations. Some of the crosses produced but few nuts due to the delay in pollinating the clusters resulting when late maturing pollen was used.

"The pecan separating and sizing machines have been set up in their permanent location."

F. N. Dodge, Shreveport (Robson), La.

Writing from the Robson pecan field station on October 26th, he says: "There is no significant difference in the yields made by the bordeaux sprayed or the unsprayed Moneymaker trees this year. It will be recalled that last year the unsprayed Moneymaker trees made no yields of pecans, while bordeaux sprayed Moneymaker trees yielded 22 pounds per tree. The difference these two years in the response from spraying is explained by reference to notes on time and extent of defoliation the year previous to the one in which the crop was harvested.

"In 1938 unsprayed Moneymaker trees were completely defoliated by September 30th, whereas the bordeaux sprayed trees did not reach this condition until six weeks later. In 1939, however, none of the Moneymaker trees had lost very much of their foliage by October 23d. From this it appears that defoliation in September or the first part of October lowers nut production the following year. A check on the defoliation and yields of Stuart and other varieties that defoliate badly shows the same thing."

On October 19th he wrote: "More than half the Moore trees in the Pruning Orchard have been harvested this week. These have made an average production of 60 pounds of pecans per tree harvest weight. This will run right at 1,000 pounds of market weight pecans per acre. In the ten years since these trees have been planted they have produced a total of 3,000 pounds of marketable pecans per acre. More than 95 percent of this yield has been of U. S. No. 1 nuts. I believe this is a better record than that made by many older pecan orchards during the past ten years."

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NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The forepart of the week ending October 19 was spent in the field completing the harvesting of walnuts from sprayed and untreated plots in orchards located near Sherwood, Dundee, and Eugene, Oreg.

"While dry weights are not yet available, it is evident from the wet weights that spraying with both bordeaux mixture and copper oxalate has increased the crop from 50 to 100 percent. In some instances the plot sprayed with copper oxalate has outyielded the bordeaux mixture plot. Thus, in tests carried on in a 15-year-old Franquette orchard belonging to R. A. Duncan near Sherwood, Oreg., a plot of 10 trees sprayed with copper oxalate 3-100 yielded, on the average, 53.5 pounds of wet nuts per tree; a plot of the same number of trees with comparable girth measurements sprayed with bordeaux mixture 4-1-100 averaged 43.6 pounds per tree, while an untreated plot of the same size and comparable girth measurements yielded only 24.6 pounds of wet nuts, on the average, per tree. Moreover, there was a noticeable increase in the amount of gradable nuts in the crop from the sprayed blocks, which will unquestionably show up in the grade records...

"The bulk of the walnut crop has now been harvested. The crop will not be as large as previously estimated. The quality is also below par. Many crops, particularly from the hills, have a comparatively large percentage of poorly filled nuts."

Clifton W. Van Horn, Yuma, Ariz.

"Temperatures have been averaging considerably higher again during the past week," he writes October 26th. "Both day and night temperatures are up. This increased temperature has caused considerably more germination of pecans on the trees, especially in the Burkett variety.

"In some instances I know of, harvest of Burkett pecans was stopped as soon as enough had been gathered to find the extent of germination. In some cases it had reached as much as 60 percent. Some growers are not picking Burkett at all.

"Here at the station we have had excessive germination of the Burkett variety where they were given feeding cultural treatments. Where we have been using starving cultural treatments, germination is still at a low percentage."

## HANDLING, TRANSPORTATION, STORAGE, AND MARKET DISEASE INVESTIGATIONS

W. T. Pentzer, Fresno, Calif.

"The harvest of Emperor grapes is well under way," he writes on October 18th, "and so far the weather has been unusually favorable for good quality.

"The early cool nights in August and September promoted development of red color and the lack of rainfall has prevented much infection with Botrytis. There is an active demand for storage space which in many cases cannot be met because of the heavy storage of Government purchases of dried raisins and prunes.

"The Tokay variety grown in the Lodi district has been stored this season as part of a program of controlling shipments. This variety is normally not stored, but moves directly to market, and when its season is finished by early rains or frosts, the Emperor variety takes over. It is estimated that between 100 and 200 cars have been stored with intentions of moving them out of storage within a month or six weeks. The effect on the Emperor season is to delay it and necessitate storage for greater quantities than normal.

"Again this season, as in 1939, the growers of Sultanina (Thompson Seedless) grapes who could do so have stored part of their crop, refusing to ship in August and early September when heavy shipments normally depress the price to a nonprofitable level. These grapes are now moving into market after about two months storage and are bringing returns far in excess of what they would have brought in August. The storage of either of these perishable varieties, Tokay and Thompson Seedless, for a month or two would be impossible without the protection from mold that is afforded by fumigation with low concentrations of sulphur dioxide...

"Most of the summer months have been spent on problems relating to the maturity of pears," he continues. "Again as in the past two seasons, consideration has been given to the time elapsed from bloom until harvest. This was complicated by straggly bloom associated with delayed foliation as a result of a warm winter. The early blooms appeared to be the ones that withstood the post bloom drop."

Mr. Barger accompanied a citrus transportation trip to New York in August and while in the East visited Beltsville, the market pathology stations in New York and Chicago, and some commercial storage plants engaged in dried fruit storage. Mr. E. D. Mallison, now connected with the Atlantic Commission Company, visited the Fresno station the week of October 13th.

## CHRYSANTHEMUMS

It has become something of a habit to write of the chrysanthemum in November. This might give you an idea that the flowers bloom no earlier. As a matter of fact, we have chrysanthemums in our breeding plots at Beltsville that flower in July; and others that keep up the flower parade until killing frosts come. Some of these new varieties add greatly to the attractiveness of the Bureau's patio display now in progress--described elsewhere in this issue.

Surprisingly, general interest in chrysanthemums developed rather slowly in this country, a fact difficult to understand in view of the numerous chrysanthemum shows now held and the predominance of this flower at football games and similar affairs at this season. It has been since 1850 only, however, that the chrysanthemum was taken over as a greenhouse plant--to move quickly into the very first rank of commercially profitable flowers.

Twenty years ago we entered the very interesting field of breeding small-flowered types of chrysanthemums. Plants of two varieties that had stood for years in old gardens of western New York were taken and the earliest obtainable sorts from this country and England were collected and grown at Arlington Farm. Open-pollinated seed was collected from 40 or more of the earliest flowering plants. This seed produced more than 16,000 plants, from which a hundred or so early flowering plants of desirable character were selected. A similar program of breeding and selecting work has been followed ever since.

When a hundred seedlings blossoming by October 7th were obtained, that date was fixed upon as a standard in making selections. In later years 300 of the best of those that bloomed before October 7th have been retained for further trial. A dozen or so of the new hardy types thus selected have been introduced in cooperation with commercial nursery firms to which plants were supplied from which to develop their stocks. We do not distribute plants to the general public.

It has been estimated that chrysanthemum breeding work of a sort has been under way in China for two thousand years; in Japan for perhaps a thousand years; and in Europe for 250 years. Breeding work with chrysanthemums in this country goes back not more than about 150 years. Some improved chrysanthemum varieties come from mutations of older stocks. In the main, however, breeders have developed many new types by crossing old varieties and selecting the best of the offspring. Most of the chrysanthemums in cultivation have a highly mixed ancestry. One variety of known parentage, for example, is the result of five generations of the crossing of known hybrids so that it has a mixture of the characters of ten known varieties that probably include genetic elements from hundreds of early plants.

## PRODUCTION OF CAULIFLOWER SEED IN THE GREENHOUSE

The world situation on cauliflower seed supplies has directed attention to the possibility of producing domestic-grown seed to take the place of that heretofore imported. As early as 1909 the Bureau became interested in the possibility of growing cauliflower seed in the greenhouses at the Arlington Experiment Farm. The work indicated that it was entirely possible to produce cauliflower seed in the greenhouse. In 1916 J. H. Beattie became interested in the work and for a number of years continued the general experiments. The results of the experiments were not published since it was felt at the time that the cost of producing greenhouse-grown seed was such that the practice was economically impracticable. The present situation with foreign supplies cut off leads to the belief that the greenhouse production of cauliflower seed might be carried on at a profit.

Briefly, the methods found to be successful involved the production of cauliflower plants in the ordinary manner, transplanting them to the greenhouse during early autumn, growing them to the heading stage, roguing out all undesirable specimens, and keeping the remaining plants in position until the seed crop had been matured. Greenhouse space was occupied for a period of about 7 to 8 months. Ordinary vegetable-type greenhouses, in some cases with benches, in other cases with ground beds, were employed. Setting the plants in the greenhouse on successive monthly dates beginning September 1 and ending December 1 showed that under the conditions of the experiment September 1 plantings were definitely too early and December 1 plantings too late. Yields of seed per plant from the early and late plantings were only about half those obtained from the October 1 and November 1 plantings. Under other conditions the earlier or later plantings might be satisfactory. Irrespective of planting dates it was found that stunting or shock due to drying out, or exposure to low temperatures, prevented the development of normal heads, or a good seed crop. There appeared to be little difference between results obtained between October 1 and November 1 plantings. Both matured seed crops at about the same time. About one month was required for the production of the plants. In other words, seed had to be sowed one month before the plants were set in the greenhouse. The plants were spaced about 22 by 22 inches. Temperatures carried were about 50° to 60° F. during the day and somewhat lower at night. Plants set December 1 reached the edible stage about April 15. The seed crop was sufficiently dry to harvest in June. In one experiment a yield of 18-1/2 pounds of water-cleaned seed was obtained from 132 selected plants. These 132 plants were what remained out of an original 500, the others having been rogued out because of undesirable growth habits. Precautions were taken to protect the plants during the blooming period from cross-pollination with other brassicas. This was done by thoroughly screening all ventilator and door openings. A swarm of bees was placed inside the greenhouse and their activity insured pollination.

Mr. Beattie is giving this information to seed journals to encourage experiments in the domestic production of cauliflower seed.

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CHEYENNE HORTICULTURAL FIELD STATION

A. C. Hildreth, Cheyenne, Wyo.

"The first killing frost of the season hit on Sunday night," he reports October 12th, "but several varieties of flowers seem to be in good shape after the frost. The field plots of tomatoes, pumpkins, and melons, though, were hit hard enough that all of the vines were killed.

"Details from the First and Twentieth Infantry Regiments, the Eighty-third Quartermaster Battalion, the Fort Warren Hospital, and the Surplus Commodities Section of the W. P. A. have been harvesting the surplus pumpkins, squash, and tomatoes for use in the kitchens of the various units. In all, about 40 tons of pumpkins, 15 tons of squash, and 100 bushels of tomatoes were harvested...

"Dr. Hildreth and Mr. Hastings spent the first part of the week selecting the aster varieties as to color, shape of flower, etc., to be saved for seed. Work was begun on Thursday in checking the chrysanthemums for desirable characteristics. Mr. Young of the Colorado Seed Company of Denver came to the station on Thursday to look over the chrysanthemums and to give us the commercial growers' viewpoint on desirable characteristics...Dr. Benedict and Messrs. Kelso and Krofcheck attended the field day of the Forest Service Range Experiment Station, some 20 miles south of Cheyenne, Thursday afternoon. Members of the Cheyenne Garden Club visited the station the first part of the week and inspected the lawns and ornamental plantings."

"Another frost hit the station on Monday night of this week," he reports under date of October 19th. "It brought a low for the year--31°F. The snapdragons, petunias, marigolds, and chrysanthemums still show all their colors despite the two frosts that have hit in the last week and a half.

"Dr. Hildreth and Mr. Hastings have continued the work of selecting chrysanthemums. Dr. Babb's crew has been digging and grading potatoes this week. One tuber from the Katahdin plot weighs two pounds and six ounces.\* Dr. Fowers' crew has been cleaning and drying cucurbit seeds for further genetic trials, and measuring the length of the canes in the raspberry plots. Doctors Benedict, Bohn and Babb attended the meeting of the Colorado-Wyoming Academy of Science at Laramie on Friday and Saturday."

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\*Let us hope that when Wayne Guernsey cleaned and washed this specimen it did not turn out to be a Cheyenne pie pumpkin instead of a potato!

JAF

## BUREAU OF PLANT INDUSTRY SPONSORS PATIO EXHIBIT

Well, not really an exhibition of patios, but an exhibit sponsored by the Bureau and held in the patio of the Administrative Building of the Department at Washington, D. C. It gives a remarkable picture of the Bureau's activities and reflects high credit on Mr. Ernest G. Moore, Chief of the Division of Information, Bureau of Plant Industry, under whose immediate direction it is being staged. It is materially helped, also, by the excellent series of explanatory cards, artistically lettered by Mrs. Esther G. Peppler of his office. You'd be delighted, too, with the splendid contributions our Division has made to the exhibit, with the assistance of Mr. Frank Goll. One of the panels in the front corridor has a display of flower photographs by Miss Guernsey.

The exhibit, largely of living plants, has been planned from the standpoint of the city dweller who while he may be a trifle weak on plant science is very much interested in the foundation of his daily living. He will be particularly interested in the showing of methods of controlling transit diseases of fruits and vegetables, for example, permitting them to reach his table in first-class condition. During our visit, chief attention seemed to be devoted to the potato and tomato hybrids displays—and the medal-winning collection of nut hybrids.

There are Easter lilies blooming in November, four-leaf clovers, a magnificent display of our new chrysanthemums, cotton stalks with open bolls, giant bamboos and sugarcane 15 feet high, poinsettia plants with some branches in bloom and others not, tobacco plants strikingly arranged in water cultures to show how they react to mineral deficiencies, and a collection of soil samples 6 feet in depth showing 8 of the principal soil groups of the country, along with a large map. You can also look through a microscope to see how the soil teems with plant and animal life—nematodes and such things, you know. And there is an exhibit of good and bad lawns, with suggestions for making the poor ones better. Yes, and a machine in operation showing how those holes are put in macaroni!

Another group of exhibits deals with plant introduction and contains a considerable number of living plants along with photographs of far away places from which most of our important crop plants were obtained. (About 75 percent of our important crop plants were brought into the United States from other countries.) Plant breeding exhibits go along with the plant introduction display to show what use the breeders are making of the material brought in. Much of the plant exploring done now is undertaken primarily to find material for the use of the plant breeder.

The exhibit will continue during November, displays being changed or augmented from time to time, and will be open to the public from 8:30 a.m. to 5:30 p.m. daily (on Saturdays from 8:30 to 4:30; Sundays, 1:30 to 4:30). Since many school and college pupils visit the displays, Mr. Moore has very thoughtfully provided a supply of mimeographed material explaining some phases of our activities, a feature that will help tremendously in building up a friendly appreciation of the work. Especially noteworthy is his effective use of photographs, many of which are enlarged to 60 x 80 inches.

Vol. 12 No. 22

November 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE



THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Vol. XII U. S. Horticultural Station, Beltsville, Md. No. 23  
December 1, 1940.

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Spraying In a Civil Service examination, one of the questions was:  
Dividends "If a man buys an article for \$12.25 and sells it for \$9.75, does he gain or lose on the transaction?" One of the applicants figured it out in a curious manner. "He gains on the cents," she wrote in her answer, "but loses on the dollars."

It works out that way with investments in agricultural research, too. For example, our colleagues John R. Cole and John R. Large reported to a meeting of the Georgia State Horticultural Society last month on a five year experiment in spraying Schley pecan trees with low lime bordeaux mixture to control scab. They produced figures showing an average net return per tree of \$6.65 a year from nuts produced by the sprayed trees, as compared to 77 cents from the unsprayed check trees. The unsprayed trees gained on the cents--but took a terrific loss on the dollars!

These trees were grown under identical conditions in an orchard with an excellent production program, nuts being produced annually. The sprayed trees averaged 51 pounds of nuts each a year; the unsprayed, 11. Only 68 nuts from the sprayed trees were needed to make a pound. It required 101 from the unsprayed trees. The small size and generally poor quality of the nuts from the unsprayed trees resulted in an average price of but 7 cents a pound, whereas those from the sprayed trees brought 15 cents. Thus the average gross return for a sprayed tree was \$7.65. After deducting \$1.00 to cover cost of materials and spraying, there is a net of \$6.65 per tree to compare with the 77 cents from the unsprayed tree. This impressive difference is given added importance by the fact that it is becoming apparent that all pecan varieties are susceptible to scab where conditions are favorable for its development. Spraying dividends is correct--and no pun intended!

## NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"The condition of the orchards in east central Georgia was noted to be better at this time of year than in any previous year although their condition could have been further improved had better culture and more fertilizer been given them," he writes November 2d from the U. S. Pecan Field Station and Laboratory. "Winter cover crops in that section were looking good despite the fact that drought has been quite severe. Nut harvest has not yet gotten into full swing but will be in another week. While the shucks are all split and the connective vascular bundles are dry in most instances the nuts are drying very slowly because the shucks remain green and lie close to the nut. The nuts can be knocked off readily, however, and we are urging that harvest proceed at once and that the harvested nuts be spread out to dry before sacking in order to prevent loss."

F. N. Dodge, Robson, La.

"This week we have harvested the Success crop of 10,600 pounds and the crop of some of the varieties in the variety orchard," he reports November 9th. "We have harvested approximately 19,000 pounds to date, and still have all the Stuart crop and some varieties yet to harvest. The total crop should amount to 30,000 pounds. By count, the Success crop is running approximately 60 percent No. 1 and 20 percent each of No. 2 and culls. By weight, however, they run approximately 80 percent No. 1, 15 percent No. 2 and 5 percent culls. The poor quality of the Success appears to be associated with the drying of the shuck, and only a small part of this can be attributed to shuck worm injury."

James H. Hunter, Albany, Ga. (Soil fertility investigations)

"Pecan harvesting was continued this week," he writes November 9th. "The Moore variety was harvested from the Time of Application of Fertilizer Experiment on the Albany Peach and Pecan Company Farm. While all the nuts were not secured at this harvest, it was revealed that these trees have produced between  $1/2$  and  $1/3$  of the heavy crop harvested from them last year. This is much better than they have done in any previous off year during the six years under test."

"One thing of particular interest is shown in the physical data on the crop harvested: The nuts from the plots receiving fertilizer in April or June are lighter than those from plots receiving the fertilizer earlier or later than these dates; the difference being 6 nuts to the pound. In the past, this has been attributed to the size of the crop on these trees but this is hardly the factor this year since the yields are close to the same on all the plots in question."

## NUT INVESTIGATIONS

Felix S. Lagassé, Gainesville, Fla. (Tung investigations)

"The low rainfall, about 11 inches less than normal since June 1, had had and is still having a tremendous effect on the tung trees in this area, particularly on heavy bearing trees that are located on the Norfolk sands prevalent in this area," he writes from the U. S. Field Laboratory for Tung Investigations on November 2. "More and more trees are actually dying and much of the fruit from other trees gives indication, by poor filling, of an oil content below normal."

The report of November 16th sounds a rather serious note. "On last Friday night the temperature went to 12°F. at Mr. Buckley's and to 18°F. at our station. This was followed by a temperature of 22°F. on Saturday night. These temperatures have browned the foliage on the orange trees around our laboratories more seriously than the prolonged cold of last winter. Observations at Mr. Buckley's nursery show the buds to be killed and severe injury to the season's growth prevalent. Examination of terminal buds on mature trees shows some injured badly, but others seem normal. A few days longer will permit of more definite information in regard to the extent of injury resulting from such low temperatures so early in the season."

## DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"The testing of grape varieties introduced from foreign sources is included as a portion of the grape production studies. The fruiting of such grape varieties has been speeded up by the application of the 'T-bud' method of hastening fruit similar to its use with grape seedlings. To illustrate the quick fruiting results obtained by this method, the Barlinka grape variety may be cited. At the request of Dr. Magness, the Barlinka grape cuttings were brought in from South Africa by the Division of Plant Exploration and Introduction. One-bud cuttings were propagated and passed through the Inspection House at Bell, Md. Very small plants were received at Fresno March 13, 1939. These were planted in gallon cans and started in the greenhouse. Small buds taken from them in May 1939 were T-budded into rootstock growth in vineyard form and forced into growth during the Summer of 1939. This fall (1940) 19 months after the small plants were received in Fresno, ripe fruit was obtained. This is a late shipping and storing type grape and may have promise in this country. Its advantages, judging from one season's fruit, appear to be size, firmness, and quality, while one disadvantage might possibly be the lack of jet black color."

"A Fall planting of 1343 seedlings was made during the latter part of October. An additional Fall planting of rootstocks was made during the week ending November 16th to compare with a similar Spring planting and also to furnish rootstocks upon which to bud future grape seedlings."

## DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"In analyzing the peach thinning data of this year, the same trend was found as in previous season's results--the earlier the thinning was performed, the larger the fruit was at harvest," he writes from the U. S. Horticultural Field Laboratory on October 28th. "Two early-ripening varieties, Early Rose and Early Hiley, were used in the experiments.

"In figures, 45 percent of the peaches on Early Rose trees thinned in bloom were over 2 inches in size. This percentage tapered off with later thinnings to 44, 21, 13 and, finally, only 1 percent of the peaches on unthinned trees were over 2 inches, while later thinnings at semi-monthly intervals fell off to 77, 76, 72, 67 and finally only 23 percent on unthinned trees. Early thinning was more important with the earlier-ripening variety, Early Rose, nevertheless thinning that variety as late as a month before harvest reduced the percentage of fruit under 1-3/4 inch from 79 to 24 percent.

"From the standpoint of the tree, earliness of ripening and size of fruit thinning at blossoming time was best, but from a practical standpoint it was almost impossible to do a final and complete job at that time. Also too much time was consumed in carefully spacing the blossoms. It seems that where a heavy set of fruit is in prospect, a quick thinning at blossoming time is advisable to lessen competition between fruit and foliage at that time, followed by a later, more careful thinning to space the fruits."

He had written October 21st: "Peach seeds from crosses made last spring were soaked in water and placed in the refrigerator last week for after ripening. The count of the seeds was much higher than anticipated, and showed a total of over 10,000 seeds. Less than 10 percent of these were selfed seeds. The records indicate that about 40 percent of the flowers we pollinated last spring set and matured fruit.

## NEMATODES ON SHALIL PEACH SEEDLING ROOTS

"Following up a rumor that a nurseryman had found nematodes on roots of seedlings grown from Shalil seed furnished by a Georgia grower, I found it to be true. Some of the seedlings were badly infested; others were free. Later when the trees are dug I plan to be on hand to get an accurate survey of the situation. It was not surprising, in view of Dr. Tufts' recent report on nema resistance in California, to find them susceptible, but it was nevertheless disappointing. It indicates the nematode problem is not as easy of solution as it once seemed, and much more study on the problem is needed. "

## DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The cranberry sorting and shipping season is well under way, the growers having disposed of most of their early and midseason varieties", he reports November 15th.

"The price has been favorable and the quality of the fruit unusually high. The Growers' Cranberry Company, the largest sales organization in the State, reports that up to the present time they have received not a single rejection or complaint from any buyer, which probably establishes some kind of a record. Factors contributing to this condition are the small crop, which makes buyers less critical than usual, and the fact that all berries of possible doubtful quality were sent to canneries. However, there is no question that the keeping quality of New Jersey cranberries is much better than during any recent season."

J. R. Kienholz, Hood River, Oreg.

"An orchard survey has shown that very few active cankers exist, either as perennial canker or anthracnose. An above average rainfall during October should have caused some anthracnose infection to occur.

"One trip during the rainy weather was made to collect the perfect stages of the fungi. A very few apothecia were found, and these in a deserted orchard. I have three lines of work I would like to carry on with these fungi, but it is so difficult to find spore material in the field that they must await better times. Unfortunately, the conidia are not produced readily in culture, and those formed on apple fruits are erratic and may react differently from those produced in cankers.

"A few apples are still being picked in the Parkdale section, but harvest is largely finished. It is conceded to be about the poorest quality crop ever harvested; particularly the pear crop. Packout records average between 50 and 60 percent. Considerable cullage occurred in apples from a heavy russet involving the stem half of the apple. This is probably a frost condition, since the apples also show open calyx ends.

"None of the fruit in the plots treated with boron two years ago has as yet developed drought spot.

"A particular leaf spot on apples is being studied to determine if it is truly parasitic or an invader after arsenic injury to the leaves.

"Mushrooms are exceedingly common this fall and numerous inquiries have been answered along this line. The Japanese often clear over \$1000 per season collecting the Matsu-take (*Armillaria ponderosa*) so it always remains a live question."

## DECIDUOUS FRUIT INVESTIGATIONS

R. B. Allyn, Medford, Oreg. (Duty of Water and Soil Moisture Investgs.)

"The preparation of data on the operation of the soil moisture probe is being continued," he reports October 26th from the Medford Experiment Station.

"Results of field tests of the gypsum conductivity block method of Bouyoucos for continuous soil moisture records have been disappointing. It appears that the difficulty may be in the high shrinkage and swelling character of our soil which prevents an adequate contact between the absorption block and the soil. Means of overcoming this problem are being considered.

"Recent measurements of capillary moisture penetration in undisturbed clay adobe soil show that in moist soil, somewhat above the wilting point and higher moisture contents, the moisture is drawn into the soil in such a manner that the moisture content of a soil a considerable distance from the water supply is increased before soil much closer is brought to field capacity. In other words, there is a gradient of decreasing moisture content for considerable distance ahead of the advancing water front.

Where continuous moisture films are present the capillary tension drawing moisture into the soil is believed to be an integration of all tensions present in the soil column from the water surface to points far in advance, in the path of the movement. In the absorption of water, the theory that soil moisture content reaches the field capacity before the moisture front advances into drier soil is not believed to hold when continuous moisture films exist.

"However, in drier soil, somewhat below the wilting point, where moisture films, doubtless, are discontinuous, observations have substantiated this theory. The conditions of zero moisture tension, less whatever potential is required by the gradient moving the moisture at the established rate from the free water surface to the point in question, is reached before moisture passes on into drier soil ahead. Since the moisture films are broken there is no integrated tensile force, in the drier soil, on the water and the energy for the advance of the water is restricted to the capillary potentials set up immediately in front of the advancing moisture.

"A study is being made of the effect of gypsum, organic materials such as alfalfa hay, and sand mixtures on volume changes and other physical characteristics of clay adobe soil."

## DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The vast high barometric pressure area which swept down the Mississippi valley during the week brought a very abrupt end to our mild fall weather," he writes November 16th. "Temperatures dropped rapidly, a light snow fall was recorded, and with the advent of clear weather we had mid-winter conditions. The minimum temperatures have ranged between 14° and 11°F. and since the drop to winter levels came so abruptly we anticipate considerable injury will develop in many of the peach orchards. We are afraid that mild fall temperatures have not permitted the trees to harden properly to withstand such a drastic drop in temperature..."

He had written October 26th: "The first three days of this week were devoted to harvesting the Ben Davis crop on the count trees of our 1940 spray experiment. The field data have been reduced to a percentage basis during the past two days. These calculations show that 22 percent of the fruit from the check trees had scab lesions on them and 49 percent of the fruit from the same trees had blotch lesions. The various fungicides tested gave satisfactory control of the scab fungus but of course they were not given a very thorough test as only 22 percent of the non-sprayed fruit was infected. The tests against the blotch fungus were more thorough and the standard 3-4-50 bordeaux mixture reduced the number of infections from 49 percent on the non-sprayed fruit to 0.6 percent on the trees sprayed with this material."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on October 31st he says: "On October 18 I sprayed blocks 1 and 3 in our strawberry spray plot. There are very few new leaf spot and scorch infections.

"I have spent some time the past two weeks making observations on diseases of blueberries. There is a big difference in susceptibility of the different varieties to these diseases. Pioneer and Cabot are very susceptible to leaf spot and Jersey would probably come next. Concord and Rubel are slightly susceptible, while Rancocas is resistant and Weymouth very resistant. In their reaction to powdery mildew, Pioneer, Rancocas and Cabot should be classed as very susceptible. Jersey is susceptible, Concord and Rubel moderately susceptible, and Weymouth slightly susceptible. In the Cabot and Jersey varieties the mildew is found on the upper and lower surfaces, but mostly on the lower surface of the leaves. In Concord and Pioneer it is found on both the upper and lower surfaces. In the Weymouth and Rubel it is found on the lower surface of the leaves.

"I have been on the lookout for rust on blueberry, but have not seen it in any field this fall. Last fall it was very bad at Harrison's farm on the Jersey, Rubel, Concord, Adams and Harding varieties. I was unable to find it last year at Huntington's and Coville's, and I found it very bad on both farms in the fall of 1938. Last year the infection at the Harrison farm was so severe that it caused premature defoliation in a number of varieties."

## APPLE MERCHANDISING

"A well graded apple is one that a good Irishman could eat in the dark on Friday," says a circular distributed by the Missouri State Horticultural Society, which seems determined to make apple merchandising a fine art in its State.

"The Missouri Horticultural Society has carried on an extensive campaign to popularize the apple during the past three months," writes M. A. Smith from the Fruit Disease Laboratory at Columbia, Mo. under date of November 15th, a report which also tells us that Missouri had just experienced one of the most severe cold waves recorded for the time of year, minimum temperatures at Columbia averaging 7° above zero from November 12 to 15th. "The activities included the publication of an Extension Circular which has had a large distribution, particularly to Missouri farmers," Mr. Smith continues. "The Missouri Extension Service has continued the apple day activity among the various women's extension clubs throughout the State.

"In September retail produce dealers' meetings were held in most Missouri counties of 8,000 or more population. Use of better apple merchandising was demonstrated, emphasizing apple displays, quality apples, proper use of grades and varieties and proper handling. As a result of the dealer meetings, the Horticultural Society published an 8-page circular, to be used as a follow-up program of dealer meetings. In addition, the Society printed 50,000 apple label cards for the use of the Missouri retailers in complying with the Missouri apple labeling law."

The circular gives a striking instance of the importance of quality, stating that a food store in Yakima, Wash. by selling only high quality apples was actually able to make its apple sales total 15 percent of its entire produce business although any person in Yakima could get all the free cull apples he wished a few blocks away--at an apple packing shed! The circular adds that quality apples on the Seattle market during the last three seasons increased the apple consumption there threefold.

Different apple varieties have distinct characteristics that make them particularly desirable for certain uses, it points out, warning the dealer that to permit the unwise use of a variety is certain to result in dissatisfied customers. Green or immature apples, for instance, make excellent sauce and pies but are totally unfit for eating or for use as salads. Some varieties have but a limited use and the dealer should make this clear.

"Apples that are good looking, in good condition, and adapted to the uses desired by the purchaser result in satisfied customers, repeat buying, and a quick turnover," declares the circular, adding that a quick turnover is all important in making apple sales profitable. "Satisfied customers are those who receive apples of the grade, variety and condition best adapted to their intended use and who recognize the health and food value of apples and their varied uses in the preparation of daily menus."



## DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, Amherst, Mass.

"Observations were made this week on diseased blueberry plants in three plantings," he writes October 19th from the U. S. Cranberry Disease Field Laboratory at East Wareham, Mass.

"Two of these, especially, showed a much higher percentage of dead, or dying, apparently diseased plants than has been observed in any planting previously. One of the plantings, at Stoughton, Mass., was very small, probably not more than 100 to 125 plants, but 15 to 20 of these were apparently diseased, a few nearly dead if not completely so. All diseased plants were nearly or entirely defoliated and those which were not already nearly or entirely dead had many dead twigs and small branches.

"Another planting at Danielson, Conn., which I visited en route to Amherst, was larger, perhaps an acre in all. The diseased plants, however, were limited almost entirely to a small block, a quarter of an acre or less, of bushes that had been transplanted during the summer. A very small percentage of bushes in this block showed defoliation, dead twigs, and also some bushes entirely dead just as in the planting at Stoughton. The appearance of the bushes in the field suggested *Diaporthe*. No cankers or galls were observed in either planting. In the planting at Danielson, Conn. one badly diseased bush that had not been transplanted, and a few others with small number of dead, diseased twigs, were found.

"One large bush, 7 to 8 feet high, of the Adams variety, apparently diseased, was found at Hanover, Mass. No galls, cankers or dead twigs were found on this bush, and there were no lesions on the leaves. The leaves were much reduced in size. There was a slight tendency of the smaller branches to form witches brooms. A microscopic examination of sections from stems showed the presence of fungus hyphae.

"Cultures were made from material from all of these sources to determine the causal organism.

"Cranberry picking is nearly at an end as all the growers except those with very large acreage have harvested all their berries. Sanding, repairing dikes, and similar work is now in progress."

## WESTERN REGIONAL LABORATORY MOVES

The staff of the Western Regional Laboratory for research on Utilization of Farm Products moved November 5th from temporary quarters in Berkeley, Calif. to the new building at Albany, Calif. This is the second of the four regional laboratories to be occupied. At the outset the laboratory staff will do research on apples, alfalfa, fruits, potatoes, poultry products and byproducts, vegetables and wheat.

## ADMINISTRATIVE NOTES

Long-Distance Telephone calls B. P. I. Memo 1147 dated October 31, calls attention to the fact that Form AD-102 is no longer required to support telephone calls billed to field offices or reimbursed to travelers on their expense accounts. Hereafter where toll calls are included in telephone service rendered to field stations the voucher should bear the following statement: "The long distance telephone calls covered by this voucher were necessary on account of official business, were not personal, and were in the interest of the Government." The signature of the certifying officer should appear immediately below this statement.

When official long distance calls are made by an employee in travel status they should be listed in his expense account showing the name of the person with whom communication was held, the points between which service was rendered, the date, time occupied, and the amount paid on each call, followed directly thereunder by the statement quoted above, which must be signed by the employee concerned. The signatures to such certificates, of course, are in addition to the signatures appearing elsewhere on 1034 vouchers or reimbursement account vouchers.

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Trucks for Post Office The Post Office Department as usual asks our cooperation in the loan of trucks during the Christmas season. All such requests should be considered on their own merits--we must remember that any trucks so loaned will likely be driven occasionally at least by temporary employees delivering parcels night and day under severe weather conditions. We want to help where practicable--but not at too great a possible expense for repairs, removal from dead storage, etc.

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Mail damage Speaking of mails, reminds us that a checkup on injury to packages handled through the official mail and messenger service shows that improper wrapping and marking is responsible in some instances, but sometimes the injury results from placing material in mail sacks when it should be delivered separately. These sacks are thrown and injury may result to photographs, drawings, etc. even in mail tubes. Pack such things carefully, mark them "FRAGILE" and attach special instructions for handling where necessary.

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Explosives Recent inspections by other agencies have disclosed some lack of care in storing and handling explosives and inflammatory chemicals. If you handle such items, please make certain that proper care has been taken in storing them--and handle them with care. Old dynamite, for example, becomes dangerous when the nitroglycerine soaks into the box--usually shown by grease spots. Better be safe than sorry!

## ADMINISTRATIVE NOTES

Appointments "We have been requested by the Office of Personnel of the Department to cooperate in reducing the number of personnel cases which we have been 'specializing' through that office," says BPI Memo. 1155 of November 19th. "Carrying a case through involves special attention in the Bureau, the time of the person who carries it through the Secretary's Office, and causes that office considerable inconvenience and delay. We have been asked to hold the number of these cases to a minimum.

"It will be appreciated if you will make every effort to allow more time for appointments and other personnel actions to clear through the Bureau and the Department Personnel Office. Unless this is done, you will probably be inconvenienced by the appointments not being effective on the dates that you desire. Only cases of an important and emergency character will hereafter be sent through for special attention..."

Because of the large number of appointments that have been rushed through in this manner, employees may have the wrong idea about the time needed for action under regular procedure. A careful survey over recent months discloses the fact that unclassified and temporary appointments take on the average from 7 to 10 days to go through the Department Personnel Office; and cases involving promotion, transfer and reinstatement take a much longer period of time. We should allow from three to four weeks on any action involving Civil Service approval. These cases are particularly difficult to rush in view of the fact that the Civil Service Commission is giving preference to the work of the Defense Agencies and we are no longer able to ask for special consideration.

In this connection we have been advised by the Civil Service Commission that appointees hereafter will have to pay for their physical examinations incident to appointment in the Federal Service. These examinations must be made by designated Federal part-time, fee-basis medical officers. This applies, of course, only to those appointed to the classified service from the Civil Service Commission register. Our Business Office in such cases will inform the appointee as to the nearest designated medical officer. (Civil Service Circular 2979, listing places where Federal medical officers are available for physical examination is now obsolete and should be disregarded.)

## LIBRARIAN AND AIDE RETIRE

Claribel R. Barnett, who has been an employee of the Department since 1895 and chief librarian since 1907, retired November 15, 1940, after 45 years of service. Ralph Robert Shaw has been appointed to succeed Miss Barnett as chief librarian. Emma B. Hawks, who entered the Department library the same month and year as Miss Barnett (May, 1895), also retired November 15th. She had been assistant librarian since 1907.

Vol. 12 No. 23

December 1, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y   N E W S   L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. XII

U. S. Horticultural Station, Beltsville, Md.  
December 15, 1940

No. 24

Studies in  
Bud variation

"During the last summer bud variation studies were continued by observations of the performances of three promising strains of canning peach varieties which are being grown in commercial plantings on the Fancher Ranch of the California Packing Corporation located near Merced, Calif.," writes A. D. Shamel, of the section of subtropical fruit investigations, Riverside, Calif. "The variations from which these strains were developed were found on that ranch during the period of 1926 to 1930 as early maturing limbs or entire trees, the fruits of which ripened from a week to ten days earlier than those of the parent varieties. This characteristic is an important one in commercial canning peaches as it spreads the harvesting and canning season over a longer period with economic advantages to both the growers and the canners.

"The strains being studied are the Paloro Early, Sims Early and the Phillips Early. Small progeny tests which were made of the parent variations soon after they were found, indicated that the early ripening characteristics of each of them was an inherent one. Following those tests, several orchard plantings were made on that ranch during the period of 1932 to 1940 as follows: 183 acres of Paloro Early, 90 acres of Sims Early, and 172 acres of Phillips Early...

"The crops on some of the Paloro Early trees were rather light the past season, probably due to low temperatures during their blooming period which is earlier than that of other common canning varieties. However, many of the trees bore satisfactory crops and the quality of the fruits of this strain was excellent. The crops of the Sims Early and Phillips Early strains were heavy and of excellent canning quality. The ranch management expressed the opinion again that these new strains are valuable additions to the commercial varieties grown on the ranch

"The California Packing Corporation is preparing to plant a new orchard of 360 acres of canning peaches during the coming season and has already propagated nursery trees for considerable acreages of Paloro Early and Phillips Early as part of that project, showing their confidence in the value of these strains.

"In addition to the studies of these early maturing strains observations were continued on the performance of young progeny trees that were propagated from late maturing limb variations in trees of the Sims, Libbee and Phillips varieties. These tests have not gone far enough as yet to warrant definite conclusions regarding their value, but the indications are that strains may be developed from one or more of them which will produce fruits maturing one week to ten days later than normal and in this way spreading still more the harvesting and canning operations of these varieties. Thus through the selection of early and late maturing bud variations it may be possible to develop strains of these or others of the important commercial varieties which will extend the picking and canning season of each of them from two to three weeks. Some one or more of these early or late strains of the more desirable varieties may possibly replace a less desirable variety which has been continued in cultivation largely on account of the time of maturity of its fruits.

"While studying a block of the Phillips Early trees planted in 1934, an extra-early limb and a similar entire-tree variation were found which were identical to the Phillips Early strain except their fruits were mature about a week earlier. These variations are particularly interesting ones because they illustrate the possible origin of entire-tree variations from the unintentional use of buds from bud variations during nursery propagations.

"Similarly in a planting of the Sims Early strain a late maturing limb variation was found with fruits maturing later than those of the normal Sims. The fruit and foliage characteristics are apparently identical with those of the Sims Early and the normal Sims excepting the time of the maturity of the fruits. Seedling nursery trees were budded to this variation for a progeny test similar to those carried out heretofore with other promising bud variations."

F. E. Gardner, Orlando, Fla.

"We had sub-freezing weather the mornings of November 16 and 17," he writes, "with a low of 24°F. briefly on the laboratory grounds the 17th. At the farm our official weather station recorded 28.5°F. but in lower spots the temperature was a few degrees colder. We had our oil pots burning both nights in order to save certain young material such as mangos and papayas. Papayas not heated were of course killed or badly injured. Our seed sources which we tried to protect, I believe got by. Some young citrus at the farm sustained damage to the foliage but the wood was not

## SUBTROPICAL FRUIT INVESTIGATIONS

F. E. Gardner (continued)

injured.

"The freeze, coming so early and so abruptly after a protracted warm spell, caused more damage to citrus trees and fruit than was generally thought at first. Old timers claim they do not recall so severe a spell so early in the season.

"Following the calamitous cold of last season on our young plantings at the farm, it is rather discouraging to have them nipped again before they have recovered from the previous beating."

## NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"It has become evident this week that the freezing temperatures that occurred on November 15 and 16 were far more devastating than we realized at the time," he writes November 23d. "Killing back of the branches and of the trunks of trees that had been planted in the orchard last spring is severe. In addition there is a discoloration in the region of the cambium that extends downward often as far as the surface of the soil. From previous experience it seems likely that these trees will be weak and poorly shaped unless they are cut back severely next spring and allowed to form a new trunk and new set of foundation branches.

"Seedling nursery trees show injury in the cambium that in many cases extends to the ground line. The tops of the seedlings are always removed at transplanting time but injury in the cambium extending down to the root may make them unsatisfactory next spring either for planting out in orchards or for budding.

"In Mississippi and Louisiana the most serious loss is that of the wood in our so-called multiplication nurseries. The budwood from bearing trees is never very satisfactory. Hence the practice is to bud a few trees from the original parent, force them to make a good growth in the nursery and use this wood for further propagation purposes. A preliminary survey shows little or no satisfactory budwood left in our own nursery or in the nurseries of private growers who have adopted the practice of budding their nursery stock.

"In our own nursery all of the trees that were budded late in the season and which therefore had failed to make sufficient growth to produce some well hardened tissue near the base, are dead. Even among the trees budded early last April, the injury to the cambium in some cases

George F. Potter (continued)

extends clear back to the point of union. From our observations made a year ago we believe that such trees if left undisturbed in the nursery would bud out satisfactorily. However, we are a good bit dubious about transplanting them to the test orchard.

"Buds set this fall and covered with earth are apparently uninjured. Those not covered are mostly dead. If the budding was done late in the season, that is late in September or during October, they are all dead. A few that were budded in August or very early in September have survived without protection...

"We are glad to say that to date we have discovered no injury of any consequence to the buds and shoots of mature tung trees. We have not been able to examine any large number of buds or to make observations over any wide area. However, to date no injury to flower parts has been found. In a few instances some slight injury appears in the pith, just back of the growing point. From previous experience it is believed that this will do little or no harm.

George M. Bahrt, Fairhope, Ala.

"I have been checking up on the fertilizer practices of the growers in the vicinity of Fairhope and correlated the results with the percentages of oil obtained from the tung nuts," he writes November 30th. "I find that the growers who apply potassium in addition to phosphorus and nitrogen have the highest percentage of oil content and better filled out seeds. In a few instances, however, where the oil content was low and the seeds were not filled out the only fertilizer applied was phosphate in the fall. In other instances, however, where the oil content was low and the seeds poorly developed both nitrogen and phosphate had been applied but potash was omitted. This information checks with the results I obtained with citrus. Citrus fruit from the potassium treated plots produced a higher percentage of well filled out seeds than trees receiving little or no potassium."

## DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"With temperatures ranging from 30° to 34°F. during several mornings of the week, practically all vine foliage was killed at the station here," he reports November 23d. "Some fruit left for late tests also showed frost injury. The lowest recorded during the week was 30°F. on our thermograph, but slightly lower vineyard temperatures were reported. Vine growth started mainly about March 18th and terminated on November 18th, making a growing season this year of 245 days."



## NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"From the inquiries we receive one can conclude that nut plantings are on the increase and that interest in nut growing is expanding in California," he writes November 16th. "It has taken considerable time to give out definite advice but I feel that this sort of information is of considerable importance. Also the University and the Extension Division here are giving out certain types of information. The effect of all this, I expect, will prove of considerable benefit to the industry. I may add that the walnut bearing acreage will show considerable increase and the expansion in almond planting will be considerable.

"Certain lines of walnut pollination have received considerable attention this year. We have now finished quite largely the field examination of the results of last Spring's pollination work. The work this year as well as that done previously clearly shows that Persian walnut varieties pollinated by *Juglans hindsi* resulted in a heavy set and the production of normal nuts. When *Juglans nigra* pollen was applied to Persian varieties entirely different results were obtained than was the case when *Juglans hindsi* pollen was used. The application of *Juglans nigra* pollen resulted in an exceedingly small set of nuts and many of these were deformed. I am wondering whether the nuts from Persian and *Juglans nigra* crosses will germinate as well as the nuts resulting from the Persian and *Juglans hindsi* crosses.

"Previous estimates of the walnut crop will be considerably larger than actual results will substantiate. Orchards in Northern and Central California will not come up to expectations. In some instances this is due to lack of proper pollination. Walnut blight was bad in some orchards this year and often the crop has been reduced as much as one-third in particularly badly infected orchards. I understand that the Southern walnut crop is much lighter than should be the case and that some of this is accounted for by heavy codling moth damage. Codling moth is even doing some damage in districts north of the Tehachapi this year. It appears that the walnut crop is running to large sized nuts. It seems probable that there will be a shortage of the lower grade nuts and those in the small sized classes. The almond crop will run considerably under the earlier estimation, as was stated in one of my previous reports.

"The almond crop has been spotted. In the first place the nuts will not be as large as was expected. It is apparent that when the almond trees bear light crops the nuts are more apt to be inferior and of small size than when heavy crops are common. In that way the almond seems to differ considerably from the walnut. This has been the case in past years as well as during the present season. In some districts the peach twig borer did considerable damage this year and brown rot was also bad. There was some shot hole damage this year. I regard this year as considerably below

## NUT INVESTIGATIONS

Milo N. Wood (continued)

the average for the almond crop. There were, however, some orchards which have excellent crops. On the whole there was a combination of undesirable conditions to lower the almond production per acre this year.

"Our new Jordanolo and Harpareil almond varieties seem to be doing well. In some districts the yields from these varieties were lighter than has been the case in the past, but when compared with other almond varieties blooming at the same time the advantage of production is in favor of the Jordanolo and Harpareil. I have not seen all the growers having Jordanolo but many growers have informed me that their bearing trees of the variety are producing well. I also learned that quite a number of growers are contemplating planting the Jordanolo this spring and some will also plant the Harpareil."

F. N. Dodge, Shreveport, La.

"In weighing the nut crop from the cultural experiment at the Robson, La. orchard it has been easy to see that the crop differences that have shown up in the past years are even more pronounced this year," he writes November 23d. "Some of the previously low-producing varieties such as Stuart, Success and Moneymaker, have made good crops this year. However, the largest yields have again been made by the previous high producing varieties--Mahan, Moore and Teche."

Arthur O. Alben, Shreveport, La.

"Harvesting of the pecans for the Shreveport area is pretty far along," he writes November 23d. "Some orchards have finished and others are about half through. The Skannal Orchard, Sligo, La. has, I believe, the record production on improved varieties. Five Stuart trees produced a total of 3,500 pounds of nuts."

## POISONOUS SUBSTANCES, DANGEROUS MACHINERY, PUBLICITY

In order to insure that all statements in Department publications concerning the use of poisonous substances or dangerous machinery are written so as to properly safeguard human beings and animals, the Secretary's Office has requested that all manuscripts containing such statements be cleared through the Department's Safety Specialist. Section leaders should see, therefore, that all manuscripts from their section are cleared through Mr. Charles M. Fergusson, the Department's Safety Engineer (Room 337, Administration Building, Washington, D. C.) before they are sent to Mr. Gould for approval and editorial attention.

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### NUT INVESTIGATIONS

#### Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on November 23d he says: "Most of the week was occupied with harvesting activities and the work of sizing the nuts harvested. The experimental plots at Dewitt were harvested this week and again show very strikingly the beneficial effects of thinning the stand of trees. The thinned plots produced nuts about one size larger than the unthinned plots and the nuts were materially better filled. There was very little difference in the acre yields of any of the plots. As in former years the net returns from the thinned plots will be considerably greater than from any of the unthinned plots.

"The harvest at Philema is progressing slowly with a start being made in harvesting the Stuart nuts. The freeze-killed foliage is beginning to fall and harvest of the nuts will be facilitated.

"Temperatures during the week were normal with no additional rainfall. The freeze of the previous week caused no apparent injury to cover crops in this section."

#### C. L. Smith, Brownwood, Texas.

"A cold wave hit here on the night of November 12th and the temperature went to 19°F. on the night of the 13th. Thus all leaves on pecan trees were killed. Much damage to hardy plants was also done because the previous temperature was not low enough to harden them.

#### \$100 PER ACRE INCREASE FROM PRUNED TREES

"Yield records were taken from November 4th to 9th from foliage spray experiments in the Lucas orchard, yields were taken for trees in topworking experiments, photopsynthesis and transpiration work continued, and yield records from pruning block in Wolfe's orchard taken. These records show the value of the Burkett nut crop from pruned trees to be worth \$100.000 per acre more than the crop from unpruned, thinned trees.

"Pecan nut harvesting is being continued but is slow because we cannot get any regular help. We are using college students who can work only a few hours per day on certain days of the week. The army camp construction is utilizing all labor in this area, and, in fact, from many other sections. There are 7,000 or 8,000 workers engaged in construction of the camp, so all pecan growers are short on help for harvesting their pecans."

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**HANDLING, TRANSPORTATION, STORAGE, AND MARKET DISEASE INVESTIGATIONS.**

Writing from Wenatchee, Wash. on November 8th, Mr. Edwin Smith gives us an interesting summary of what the members of the fruit handling group in the Northwest have been doing in recent weeks, and of conditions prevailing there.

"Work on spray residue removal was done at Yakima October 24 to 26," he reports, "after the Winesap lots had time to develop wax after harvesting. The fruit was secured October 14th, after which the weather was warm and wax developed satisfactorily.

"From this it will be seen that the apple harvest was very early. The trees were in blossom April 18 to 21, and maturity was more in keeping with these dates than might be expected. Loss of apples by dropping started in during September and some Winesap crops were picked by September 22d, 155 days from full bloom. By October 10th, 173 days had elapsed and most growers were well along with their Winesap harvest and finished up between October 18 and 21.

"The weather was warm and fruit not placed immediately in cold storage ripened rapidly.

"Most crops of Delicious apples had a greater percentage of size 80 or 88 than of other sizes. Some crops had even larger sizes. Thus we have a combination of factors adverse to good storage quality. The Delicious from the Unity Orchards, Brewster, are again showing a heavy invasion of blue mold decay and are being repacked at the present time. Many of the invasions are at lenticels. Dr. English has dyed some of these specimens by the vacuum method. He has observed that the dye did not penetrate the lenticels at the centers of decayed areas where the court of entry apparently was at a lenticel. In fact he seldom got penetration in the decayed areas, whereas immediately outside of these areas there were plenty of lenticels which permitted entrance of the dye. We believe the change in epidermal and sub-epidermal tissue following decay must have influenced either the penetration or the effect of the dye.

"Today (November 8th) Dr. English goes to Yakima to help Mr. Ryall wash and inoculate Delicious for the treatment scheduled at six weeks following harvest.

"Dr. Gerhardt has been working on his volatile studies with Delicious, and is preparing our paper on the storage of apricot and peach fruits in atmospheres of carbon dioxide for the meetings of the American Society for Horticultural Science.

"A great variety of washing methods were used this season. In this area most of the washing was done with a dual process treatment by commercial packers. The change in residue tolerance resulted in

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HANDLING, TRANSPORTATION, STORAGE, AND MARKET DISEASE INVESTIGATIONSEdwin Smith (continued)

packers generally using lower solution temperatures. Many crops were washed with soda ash or soap and water in the first tank at 90° to 100°F., and with 1 percent HCl at 80° or 90° in the second tank.

"However, the wide use of fluorine sprays necessitated temperatures of 100° or even higher with many crops. In the Yakima district more crops were packed by growers and some attempted to use their old McGonagle 'bull-wheel' machines and wherever cryolite sprays had been used high fluorine residues usually followed. This undoubtedly will cause a curtailment in the use of fluorine sprays in 1941 unless the fluorine tolerance is changed.

"The loss from codling moth and San Jose scale has undoubtedly been the worst in history. Fieldmen and growers have not lost confidence in their methods of control, providing some conditions can be changed. One of these is weather (warm winters and a long growing season) which cannot be changed but which may not be expected to continue indefinitely without a change. The other prime contributing factors are abandoned orchards and lack of funds for spraying. The former was a political issue this year and the county-commissioners-elect are pledged to take up an orchard sanitation program. I believe an improvement may be expected in one way or another. Growers themselves are organizing in district committees to offer their services for taking out unsprayed orchards in their neighborhoods during this winter.

"One insecticide firm has experimented with and is offering to the public a spray for killing codling moth in the over-winter stage. It is a pyrethrum product mixed with a light oil which is sprayed on the trunks and limbs of trees at this season of the year. The spray penetrates beneath the rough bark and in the cracks at crotches and kills the larvae in about 15 minutes. They claim about 95 percent kill.

"Another method in sanitation is the 'water-gun' and this has had some use for two seasons. The gun is simply a cap which replaces the nozzle on a spray gun. A hole is drilled through the cap to permit a jet of water to leave the gun under very high pressure. In fact, by holding the stream on one spot the pressure is sufficient to rip the bark open to the cambium. It performs the job of scraping trees very much quicker and cheaper than is possible with scrapers, but the experiment station's observation has been that the water jet does not kill the worms to any extent.

"The weather has continued very mild and thus far we have had but few nights with killing frost."

## U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman (vegetable crop investigations)

"Asparagus cutting (the fall cut plots) is finished for this season," he writes for the week ending November 9th. "Our data, gathered over a period of three years, strongly suggest that the production of asparagus as a fall crop should have a place in the home garden, and under conditions of favorable moisture supply or control, offers promise as a market crop...Locally grown garden crops, including sweet potatoes, are very scarce and high in this section. Even the South's commonplace fall crops--collards and 'cow' peas--are scarce and high.

He wrote for the week ending November 2d: "A visit was made to Crystal Springs, Miss., and Baton Rouge, La. It is yet too early under normal times to guess the acreage of the various crops that might be planted in the Crystal Springs area and especially will this apply this year--cropping conditions and returns having been so bad in that section this year--however, cabbage beds are being made and planted here and there, and it might appear as if a good area will be planted. Fall beans appeared to be good and plentiful in the Hammond-Baton Rouge, La. area. Sweetpotatoes in the St. Francisville, La. area appear to be short in total yield but the quality appeared good and as usual growers in that section are of good spirit, doing a good job and are busy with their harvest."

Atherton C. Gossard (nut fruit investigations)

"Monday and Saturday morning were spent in general routine work," he writes for the week ending November 9th. "On the four days in between, a trip was made through south Alabama and south Mississippi. The primary purpose was to investigate pecan seedlings which show enough promise for testing under various orchard conditions, and may later be worth establishing as new varieties. More than a dozen nice appearing seedlings were examined, photographed, as much as possible of their history learned, and sample of the nuts obtained..."

"General orchard conditions were observed during the progress of the trip, particularly in the more intensified pecan growing sections along the Gulf Coast. Although the pecan crop in that section is generally light, it is not quite so poor in the better cared for orchards as it is farther north, where a late spring freeze killed many pistillate blossoms...Generally speaking, the Gulf Coast section presents a pretty sorry sight. Thousands of acres of pecan orchard have been abandoned and are growing up to grass. The trees are making very little terminal growth, and are almost completely defoliated at this time, when they should still retain a large amount of their foliage. The largest orchard development near Spring Hill, Ala. has been turned into a kudzu farm. The Satsuma orange trees, originally interplanted with the pacans, are gone. The pecan trees show the effects brought about by a strongly competitive crop.

## U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Atherton C. Gossard (continued)

Like the completely abandoned ones, they are making poor growth, are almost completely defoliated, and have no crop. Kudzu is all over the ground, fences and trees. A few growers in the Fowl River section of Mobile County, Alabama, have continued the use of such winter legumes as Austrian peas and hairy vetch, and have kept up a little summer cultivation. These orchards look considerably better than the abandoned ones, and have perhaps a fourth to a third of a crop. In the Ocean Springs section of Jackson County, Mississippi, an attempt is being made to rejuvenate some of the previously abandoned orchards by means of cultivating, fertilizing and cover cropping. This has not been carried long enough to produce, or show that it will produce, profitable returns. Mr. Theodore Bechtel II of Ocean Springs, Miss. estimates that in spite of this rejuvenating program about 75 percent of the orchards which were being well cared for 15 years ago are now abandoned."

N. H. Loomis (small fruit investigations)

"Throughout the summer and fall at monthly intervals a record has been obtained of the number of leaves per mother plant on Blakemore and Fairmore strawberries," he writes November 9th. "It has been interesting to note that the number increased until July 1 and then decreased through September 1, followed by a marked increase especially in October.

"This coincides with the appearance of the strawberry plantings in this district. In July and August they frequently look as though they would not survive the summer and then pick up again when the weather gets cooler. All of the adapted strawberry varieties make runners during the summer, but many of our Klondike growers do not save runner plants until fall in order to cut down summer cultural costs. This practice has probably accounted in part for their poor stands with other commercial varieties which do not produce many fall runners."

G. A. Meckstroth, Willard, N. C.

"The State Department of Agriculture estimates that the strawberry acreage in North Carolina in 1941 will be 7,800 acres as compared with 6,000 in 1940, an increase of about 30 percent," he writes from the Coastal Plain Station on November 15th.

"The estimated 1941 acreage is about the same as the 10 year average for 1929 to 1938. Other estimated increases in 1941 acreage in other strawberry producing States are as follows: Arkansas, 33 percent; Tennessee, 10 percent; and Virginia, 12.5 percent."

## TRANSPORTATION OF HOUSEHOLD GOODS, ETC.

The Executive Order issued by the President pursuant to Public No. 839, 76th Congress, entitled "An Act to provide for uniformity of allowances for the transportation of household goods of civilian officers and employees when transferred from one official station to another for permanent duty," changes materially the procedure heretofore in effect. The Department Regulations will be amended accordingly.

In the meantime employees concerned should bear in mind that the payment of expenses for transportation of employees' household goods and personal effects when authorized by law must in future be specifically authorized or approved by the head of the department or establishment concerned. Until further notice, that is, we must obtain specific approval from the Office of the Secretary of Agriculture on those authorizations that provide for the movement of household goods or personal effects of an employee when transferred from one permanent station to another.

Under such authority an employee with dependents is allowed to ship a maximum of 5,000 pounds. The maximum allowance for an employee without dependents is 2,500 pounds. For the application of these limitations the gross weight shall be computed as 80 percent of the combined weight of the property and the packing and crating used for the shipment, except that for transportation by vessel, 50 percent of the combined weight of the property and packing, crating, boxing and lift vans is taken. Transportation charge on weight in excess of the maximum allowed must be paid by the employee.

Household goods and other personal effects shall not include groceries, provisions, wines, liquors, animals not necessary in the performance of official duties, birds or automobiles.

The valuation of property as declared for shipping purposes shall not exceed that at which the lowest freight rates will apply. Should employees desire a higher valuation, he must assume all costs of transportation in excess of the charges at the lowest rate. Insurance, if carried on such shipments, must also be paid for by the employee.

When bids are requested or recommendations of acceptance on field bids are made for such transfers of effects they should be accompanied by a statement setting forth whether (1) the employee has any dependents residing with him; (2) the bids include movement of any items that are not allowable; and (3) the employee understands he must assume the extra cost of movement of goods, if any, in excess of the weight and/or measurements stated in the Executive Order.



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ADMINISTRATIVE NOTES

Jury service Recent legislation covering jury service to be performed by Federal employees provides that employees who may be called for jury service may serve as jurors without loss of pay. Until Department regulations have been prepared and made available, leave slips shall be submitted covering all such service as "jury leave." The leave slip should show the name of the court in which service was performed. Check in payment should be accepted and turned in to the Division for attention.

These conditions involve certain pay roll explanations and entries, which can best be determined by the administrative officers of the Division, upon presentation of all the facts. For this reason, it is requested that any individual of the Division who is called upon to perform any jury service whatsoever immediately report such call to the Business Office. Advice will then be given as to the steps to be taken in properly complying with the regulations.

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Mimeographing, etc. In connection with orders for mimeographing, etc. drawn on the Department's Addressing, Duplicating and Mailing Section in Washington, D. C., the Office of Information has asked that in the future, to facilitate the record keeping and the work of the Bureau Accounting Service, such requisitions be submitted in triplicate on the green Duplicating Requisition form--AD-72. This means that you will have to prepare an original and five carbon copies on this form since the original and two carbon copies must go to the Addressing, Duplicating and Mailing section; 1 carbon copy to the Chief of Bureau; 1 to the files of our Business Office; and 1 to your section leader for his files. Usually, field offices should keep a copy in their files also.

FOR FIELD EMPLOYEES IN PARTICULAR

Speaking of field offices, in particular, it might be well to mention here a matter that sometimes causes inconvenience--the failure to supply sufficient copies of such requisitions, or of manuscripts, vouchers, etc. The copies mentioned by the administrative notes of the News Letter include only those needed by the administrative offices at Washington, D. C.

In addition, of course, you should make certain that a copy is prepared for the files of your section leader; and usually it is desirable, as stated above, to retain copies of such items for your own reference files. Remember, too, that orders for supplies, requests for letters of authorization, manuscripts, etc. should be sent through your section leader. They have to be taken to him for approval, anyway, so you will save time by sending them to him in the first place -- for approval and transmittal to Mr. Gould.

Vol. 12 No. 24

December 15, 1940

THE DIVISION OF FRUIT  
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

# NEWS-LETTER



BUREAU OF PLANT INDUSTRY  
UNITED STATES DEPARTMENT OF AGRICULTURE

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MEASURES: Small amount of material for analysis  
Analysis of  
Detailed description of the material  
Detailed description of the material  
Detailed description of the material  
Detailed description of the material

For the purpose of the study, the following  
method of analysis was used:  
Photographic method for the study of  
the material, using a camera  
Detailed description of the material

Results of the study are as follows:  
Detailed description of the material  
Detailed description of the material  
Detailed description of the material  
Detailed description of the material

Conclusions:  
Detailed description of the material  
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References:  
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Appendix:  
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Summary:  
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